

**REVIEW OF CANYON ROCK  
AB2588 HEALTH RISK ASSESSMENT (HRA)**

October 8, 2020

Site ID: 00049

Toxics Emissions Inventory Year: 2013

Review Conducted by: Andrew Bernabe, SDAPCD

A Health Risk Assessment (HRA) was performed for the Superior Ready Mix Canyon Rock Facility, 7500 Mission Gorge Road, San Diego, CA 92120 by Sage ATC Environmental Consulting. This Submittal HRA was provided to the District for review on February 3, 2017.

The following are the District's results based on modifications made to the Submittal HRA. These results take into account the facility's written responses provided to the District on April 19, 2017 and September 3, 2020.

**Summary of Review Risk Assessment Results:**

Cancer Point of Maximum Impact (PMI)	26 in one million
Cancer Maximum Exposed Individual Resident (MEIR)	12.4 in one million
Cancer Maximum Exposed Individual Worker (MEIW)	0.8 in one million
Chronic Noncancer Health Hazard Index (PMI)	0.81
Chronic Noncancer Health Hazard Index (MEIR)	0.81
Chronic Noncancer Health Hazard Index (MEIW)	0.55
8-Hour Noncancer Health Hazard Index (MEIW)	0.02
Acute Noncancer Health Hazard Index (PMI, Day)	1.02
Acute Noncancer Health Hazard Index (PMI, Night)	0.53
Acute Noncancer Health Hazard Index (MEIR, Day)	0.96
Acute Noncancer Health Hazard Index (MEIR, Night)	0.03
Acute Noncancer Health Hazard Index (MEIW, Day)	0.93
Acute Noncancer Health Hazard Index (MEIW, Night)	0.03
Sub-Chronic Lead Exposure Risk	< 0.12 ug/m <sup>3</sup>
The High Exposure Scenario approval level is 0.12 ug/m <sup>3</sup> in the Air Resources Board (ARB) Risk Management Guidelines for Lead, 2001.	
Population Excess Cancer Burden	0.0009

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## Summary of Health Impacts

Cancer risk at the MEIR is due to arsenic (~75%), hexavalent chromium (~7%), formaldehyde (~7%), and benzene (~4%) from various emitting sources within the facility.

The Acute Health Hazard Index during the day (HHI) to the immune system is due to nickel (~49%), arsenic (~32%), formaldehyde (1~4%), and benzene (~4%) from various emitting sources within the facility.

The HRA concludes that cancer risk at residential receptors exceed the public notification levels specified in District Rule 1210. The following maps show the extent of the public notification area.

Residential Cancer Risk > 10 in one million  
(Green Contour)



## **REVIEW OF CANYON ROCK AB2588 HEALTH RISK ASSESSMENT (HRA)**

### **District Comments:**

#### **Modelling**

The District accepted urban dispersion coefficients presented in the Submittal HRA. It is noted that in the future, rural dispersion coefficients may be required if District policy changes.

The District remodeled using the urban coefficients and adjusted the surface roughness from the default of 1.0 to 0.437 which is more representative of the prevailing northwesterly winds for the Kearny Mesa 2010-2012 meteorology data, which was used in the analysis. The dispersion results comparing a surface roughness of 1.0 reduced to 0.437 were negligible. The surface roughness equal to 0.437 was used in the District's HRA revision. The Kearny Mesa 2010-2012 meteorology data was processed with AERMET Version 16216, and the regulatory default adjusted ustar option was used.

The most recent NED Geotiff 10-meter resolution terrain data was uploaded in the Lakes AERMOD model and used for running AERMAP.

The Concrete Batch Plant (Permit 972902) exhaust was modeled as a vertical unobstructed point source by the District, which is consistent with the Submittal HRA. The applicant verified the stack exhaust is vertical with supporting pictures.

For the AERMOD particulate depletion option, the wet and dry deposition were disabled in the Submittal HRA which is the District's default modelling procedure.

#### **Risk Calculations**

In accordance with the OEHHA Guidance Manual, 2015, Estimation of Concentrations in Air, Soil, and Water, Section 5.3, the OEHHA default deposition rate of 0.05 meters per second (representative of particulate matter greater than 2.5 microns in diameter) for all fugitive and uncontrolled particulate matter was used by the District for the non-inhalation exposure pathways. The Asphalt Baghouse used a deposition rate of 0.02 meters per second. The non-inhalation pathways for arsenic (dermal contact, soil ingestion, and mother's milk) contribute to 75% of the total risk of 12.4 in one million at the MEIR. The facility controls emissions from haul roads with watering and claims emissions from the haul roads would only be PM<sub>2.5</sub>. Since fugitive dust of arsenic is treated as PM<sub>10</sub> and the District disagrees that watering results in all dust emissions being PM<sub>2.5</sub>, a deposition rate of 0.05 meters per second should be used. The District has also determined (see AP-42, Hot Mix Asphalt Plants, 2004, Table 11.1-4) that the default deposition rate of 0.05 meters per second is most representative of the Drum Mix Asphalt Production Plant (Permit 930742) emissions. In contrast, the Submittal HRA assumed a

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deposition rate of 0.02 meters per second for all particulate emissions. It is noted though that the noninhalation risk from Cr+6 is negligible, therefore, using a deposition rate of 0.02 meters per second will not significantly influence the risk contribution from Cr+6.

The Submittal HRA used fraction of time (FAH) adjustment. Since there is no school within a 1.0 in one million residential cancer risk isopleth in the District's revised modeling, FAH adjustment was applied for receptors with ages less than 16 years. This is consistent with the submitted model as well as OEHHA Guidance Manual, Fraction of Time Spent at Home for Cancer Risk Assessment, Section 8.2.2.



## Canyon Rock District Health Risk Assessment

Point of Interest	Risk Type	Value
*MEIR	Cancer	12.4 in one million
MEIR	Chronic HHI	0.81
MEIW	Cancer	0.78 in one million
MEIW	Chronic HHI	0.55
MEIW	8-hour Chronic	0.02
PMI (Day)	Acute HHI	1.01
PMI (Night)	Acute HHI	0.53

\*The MEIR Cancer Risk was recalculated for the Asphalt Baghouse (STCK2) using a deposition rate of 0.02 m/s. The MEIR cancer risk was reduced from 12.6 to 12.4.

1. Maximum Exposed Individual Resident (MEIR)
  - a. Location (Attachments 1, 2): UTM Zone 11; 493027.9 m E, 3629971.27 m N; apartment complex on eastern side of Mission Gorge Rd. and Conestoga Way
  - b. Cancer Risk = 12.62 in one million
    - i. Top 3 Source Contributors (Attachment 3):
      1. 19% of Risk: STCK2 - Asphalt Plant Baghouse
      2. 6% of Risk: SCR2 – Screen #2
      3. 6% of Risk: SP17 – RAP asphalt plant loading area
    - ii. Top 3 Pollutant Contribution (Attachment 4):
      1. Arsenic (75%)
      2. Hexavalent chromium (7%)
      3. Formaldehyde (7%)
    - iii. Because cancer risk at the nearest K-12 school (Excelsior Academy, attachments 1, 2) was lower than 1 in one million, a fraction of time at residence was applied to all age bins.
  - c. Chronic Health Hazard Index (HHI) = 0.81

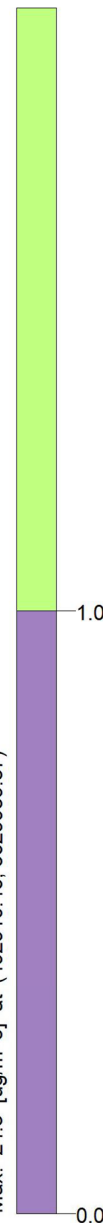
2. Maximum Exposed Individual Worker (MEIW)
  - a. Location (See attachment 5): UTM Zone 11; 492992.9 m E, 3629951 m N; BJ's Rentals, 7585 Mission Gorge Rd.
  - b. Cancer Risk = 0.78 in one million
    - i. Adjustment to operating schedule was accounted for in dispersion modeling. Consequently, no Worker Adjustment Factor (WAF) was applied to the annual ground level concentrations.
  - c. Chronic Health Hazard Index (HHI) = 0.55
  - d. 8-hour Chronic Health Hazard Index (HHI) = 0.02
3. Point of Maximum Impact (PMI): Day Operations
  - a. Location (attachment 8): Parking lot at MEIW, BJ's rentals, AERMOD receptor 2764
  - b. Acute Risk = 1.01
    - i. Top contributors by source (attachment 9):
      1. 12% of risk: RD06UT -- RAP recycling import concrete and broken slabs, unpaved
      2. 10% of risk: RD13UT -- Asphalt Plant transfer, RAP hauled from recycle plant
      3. 10% of risk: STCK2 --
    - ii. Top contributors by pollutant (attachment 10):
      1. 49% of risk: Nickel
      2. 32% of risk: Arsenic
      3. 14% of risk: Formaldehyde
  - c. Because AERMOD selects the hour of highest impact regardless of time, acute risk was split into night and day operations in order to separately evaluate each risk contribution.
1. Point of Maximum Impact (PMI): Night Operations
  - a. Location (attachment 8): Parking lot at MEIW, BJ's rentals, AERMOD receptor 2764
  - b. Acute Risk = 0.53

COMMENTS:
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PLOT FILE OF PERIOD VALUES FOR SOURCE GROUP: ALL

Max: 24.8 [ug/m^3] at (492910.46, 3629989.87)



170

4359

### Concentration

24.8 ug/m<sup>3</sup>

COMPANY NAME:

MODELER:

DATE: \_\_\_\_\_

**4/14/2020**

SCALE: 1:19.829

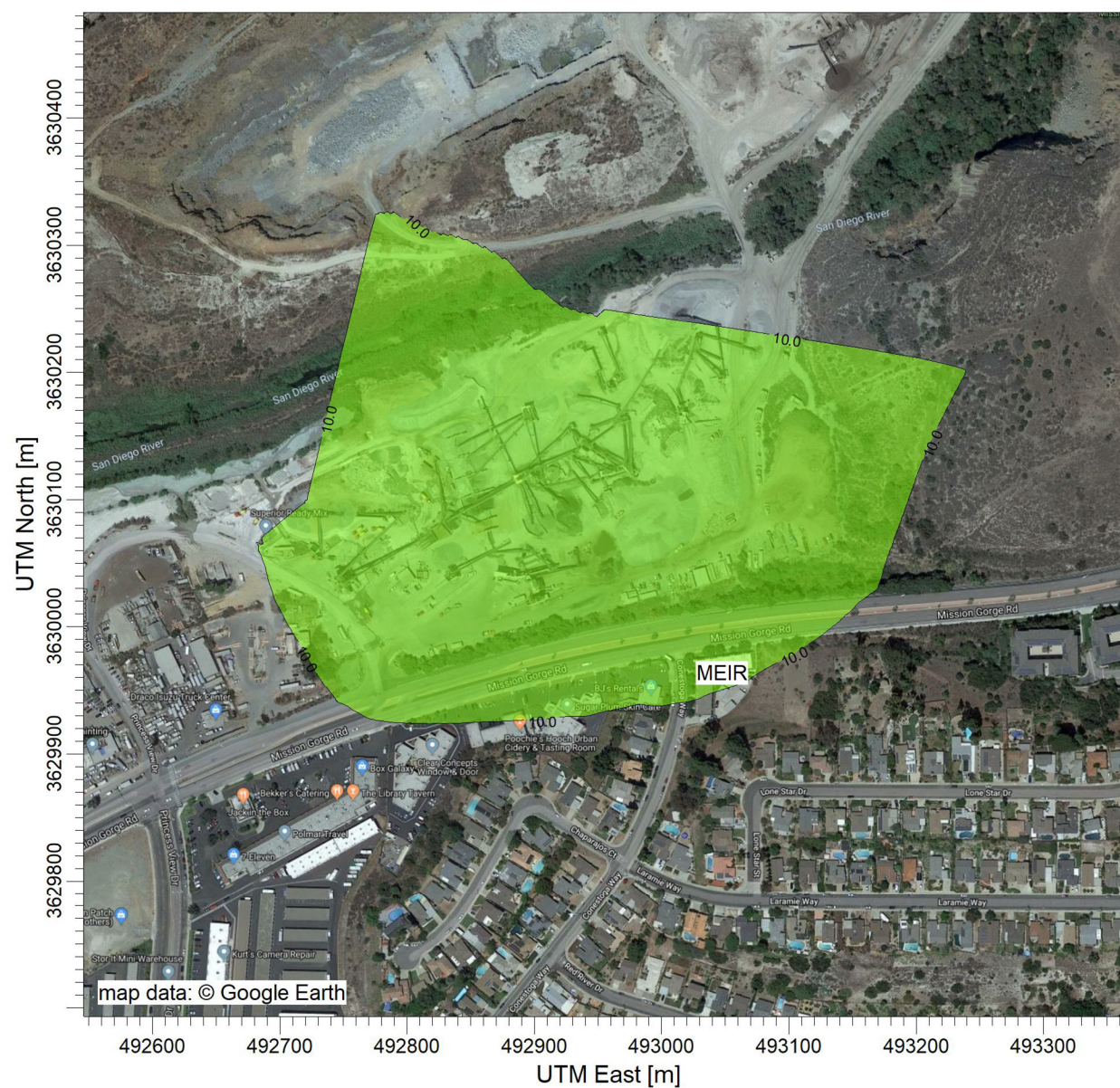


PROJECT NO.:

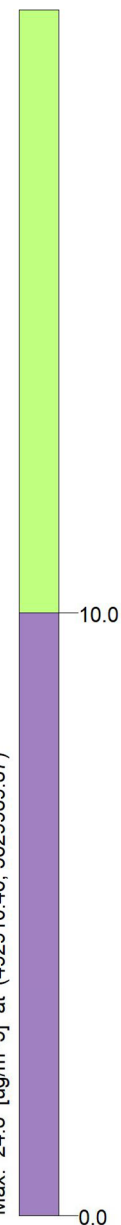


PROJECT TITLE:

COMMENTS:
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 $\mu\text{g}/\text{m}^3$ 

PLOT FILE OF PERIOD VALUES FOR SOURCE GROUP: ALL  
Max: 24.8 [ug/m^3] at (492910.46, 3629989.87)



**SOURCES:**

170

RECEPTORS:

4359

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OUTPUT TYPE:

## Concentration

MAX:

24.8 ug/m<sup>3</sup>

COMPANY NAME:

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MODELER:

DATE: \_\_\_\_\_

**4/14/2020**

SCALE: 1:5,376



PROJECT NO.:

\*HARP - HRACalc v19044 4/13/2020 11:28:06 AM - Cancer Risk by Receptor and Source

SRC	REC	GRP	NETID	X	Y	RISK_SUM	Contributio	SCENARIO	SOIL_RISK
OPITEX		1039 ALL		493027.9	3629971	4.92E-07	4%	30YrCance	4.43E-07
SCR2		1039 ALL		493027.9	3629971	7.15E-07	6%	30YrCance	6.43E-07
SP17		1039 ALL		493027.9	3629971	6.96E-07	6%	30YrCance	6.27E-07
STCK2		1039 ALL		493027.9	3629971	2.46E-06	19%	30YrCance	3.75E-07
TP15		1039 ALL		493027.9	3629971	4.97E-07	4%	30YrCance	4.47E-07
TP16		1039 ALL		493027.9	3629971	5.07E-07	4%	30YrCance	4.55E-07
TPA02		1039 ALL		493027.9	3629971	6.61E-07	5%	30YrCance	5.93E-07
						1.262E-05			9.05E-06

\*HARP - HRACalc v19044 4/10/2020 1:19:50 PM - Cancer Risk

REC	GRP	NETID	X	Y	CONC	POLID	POLABBREV	RISK_SUM	Contributi	SCENARIO DETAILS	SOIL_RISK	1ST_DRIVE	2ND_DRIVER
1039	ALL		493027.9	3629971	8.00E-05	7440382	Arsenic	9.51E-06	75%	30YrCance *	8.64E-06	SOIL	INHALATION
1039	ALL		493027.9	3629971	2.85E-06	18540299	Cr(VI)	8.86E-07	7%	30YrCance *	1.03E-07	INHALATIO	SOIL
1039	ALL		493027.9	3629971	0.009864	71432	Benzene	5.31E-07	4%	30YrCance *	0.00E+00	INHALATION	
1039	ALL		493027.9	3629971	0.080123	50000	Formaldehy	9.05E-07	7%	30YrCance *	0.00E+00	INHALATION	

\*HARP - HRACalc v19044 4/14/2020 10:03:31 PM - Cancer Risk by Receptor and Source

SRC	REC	GRP	NETID	X	Y	RISK_SUM	Contributio	SCENARIO	SOIL_RISK
ASLDTK		964 ALL		492992.9	3629951	2.38E-08	3%	25YrCance	7.14E-09
ASLDTK_N		964 ALL		492992.9	3629951	4.13E-09	1%	25YrCance	1.24E-09
CSILO		964 ALL		492992.9	3629951	1.36E-08	2%	25YrCance	4.80E-09
MIXER		964 ALL		492992.9	3629951	8.37E-09	1%	25YrCance	3.62E-09
OPITEX		964 ALL		492992.9	3629951	2.53E-08	3%	25YrCance	1.65E-08
OPITRDRE		964 ALL		492992.9	3629951	1.01E-08	1%	25YrCance	5.82E-09
OPITSP		964 ALL		492992.9	3629951	1.42E-08	2%	25YrCance	8.03E-09
RD02PI		964 ALL		492992.9	3629951	6.79E-09	1%	25YrCance	4.38E-09
RD02PO		964 ALL		492992.9	3629951	9.79E-09	1%	25YrCance	5.88E-09
RD06PT		964 ALL		492992.9	3629951	1.15E-08	1%	25YrCance	7.42E-09
RD06UT		964 ALL		492992.9	3629951	1.02E-08	1%	25YrCance	6.60E-09
RD09PI		964 ALL		492992.9	3629951	6.89E-09	1%	25YrCance	4.44E-09
RD09PO		964 ALL		492992.9	3629951	5.13E-09	1%	25YrCance	3.31E-09
RD10UO		964 ALL		492992.9	3629951	8.66E-09	1%	25YrCance	5.59E-09
RD10UT_1		964 ALL		492992.9	3629951	9.62E-09	1%	25YrCance	6.21E-09
RD13UT		964 ALL		492992.9	3629951	4.49E-09	1%	25YrCance	2.89E-09
SCR1		964 ALL		492992.9	3629951	8.62E-09	1%	25YrCance	5.61E-09
SCR2		964 ALL		492992.9	3629951	3.34E-08	4%	25YrCance	2.18E-08
SP12C		964 ALL		492992.9	3629951	4.35E-09	1%	25YrCance	2.83E-09
SP17		964 ALL		492992.9	3629951	2.53E-08	3%	25YrCance	1.65E-08
SP17_N		964 ALL		492992.9	3629951	6.56E-09	1%	25YrCance	4.28E-09
SP20		964 ALL		492992.9	3629951	7.10E-09	1%	25YrCance	3.07E-09
SP6		964 ALL		492992.9	3629951	1.10E-08	1%	25YrCance	7.14E-09
SP7		964 ALL		492992.9	3629951	1.28E-08	2%	25YrCance	8.31E-09
SP8		964 ALL		492992.9	3629951	5.21E-09	1%	25YrCance	3.39E-09
STCK1		964 ALL		492992.9	3629951	4.48E-09	1%	25YrCance	1.94E-09
STCK2		964 ALL		492992.9	3629951	2.09E-07	27%	25YrCance	1.40E-08
STCK4		964 ALL		492992.9	3629951	1.44E-08	2%	25YrCance	1.90E-10
TP01		964 ALL		492992.9	3629951	8.05E-09	1%	25YrCance	5.24E-09
TP09		964 ALL		492992.9	3629951	7.47E-09	1%	25YrCance	4.86E-09
TP15		964 ALL		492992.9	3629951	3.53E-08	5%	25YrCance	2.29E-08
TP16		964 ALL		492992.9	3629951	3.58E-08	5%	25YrCance	2.33E-08
TPA02		964 ALL		492992.9	3629951	3.54E-08	5%	25YrCance	2.30E-08
TPA02_N		964 ALL		492992.9	3629951	6.94E-09	1%	25YrCance	4.50E-09
TPA06		964 ALL		492992.9	3629951	1.87E-08	2%	25YrCance	1.22E-08
TPA06_N		964 ALL		492992.9	3629951	4.26E-09	1%	25YrCance	2.78E-09
TPC01		964 ALL		492992.9	3629951	4.34E-09	1%	25YrCance	2.82E-09
TPC02		964 ALL		492992.9	3629951	5.38E-09	1%	25YrCance	3.49E-09
						7.79E-07			3.49E-07

\*HARP - HRACalc v19044 4/14/2020 9:56:07 PM - Cancer Risk

REC	GRP	NETID	X	Y	CONC	POLID	POLABBRE	RISK_SUM	Contributi	SCENARIO DETAILS	SOIL_RISK
	964 ALL		492992.9	3629951	7.27E-05	7440382	Arsenic	5.00E-07	64%	25YrCance *	3.31E-07
	964 ALL		492992.9	3629951	1.23E-05	7440417	Beryllium	5.83E-09	1%	25YrCance *	0.00E+00
	964 ALL		492992.9	3629951	5.81E-06	7440439	Cadmium	4.91E-09	1%	25YrCance *	0.00E+00
	964 ALL		492992.9	3629951	2.63E-06	18540299	Cr(VI)	7.98E-08	10%	25YrCance *	4.00E-09
	964 ALL		492992.9	3629951	0.000122	7439921	Lead	3.98E-09	1%	25YrCance *	3.14E-09
	964 ALL		492992.9	3629951	9.60E-05	7440020	Nickel	4.92E-09	1%	25YrCance *	0.00E+00
	964 ALL		492992.9	3629951	0.008968	71432	Benzene	5.05E-08	6%	25YrCance *	0.00E+00
	964 ALL		492992.9	3629951	0.010039	100414	Ethyl Benz	4.91E-09	1%	25YrCance *	0.00E+00
	964 ALL		492992.9	3629951	0.072317	50000	Formaldehy	8.54E-08	11%	25YrCance *	0.00E+00
	964 ALL		492992.9	3629951	1.99E-05	56553	B[a]anthra	6.74E-09	1%	25YrCance *	3.44E-09
	964 ALL		492992.9	3629951	2.00E-06	50328	B[a]P	6.77E-09	1%	25YrCance *	3.45E-09
	964 ALL		492992.9	3629951	0.002763	91203	Naphthale	1.87E-08	2%	25YrCance *	0.00E+00
								7.79E-07			3.49E-07



PROJECT TITLE:

COMMENTS:



SOURCES:

**170**

RECEPTORS:

**4359**

OUTPUT TYPE:

**Concentration**

MAX:

**1.26E+00 ug/m^3**

COMPANY NAME:

MODELER:

DATE:

**4/29/2020**

SCALE:

1:522

0 0.01 km

PROJECT NO.: