



HEALTH RISK ASSESSMENT

Kirkhill, Inc.
300 E Cypress Street

Brea, CA 92821

Facility ID: 187823 (Formerly 1744)

Prepared for:

Kirkhill, Inc.
300 E Cypress Street
Brea, CA 92821

Alta Project: KIEL-18-8044

September 4, 2019



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List of Acronyms

AB	Assembly Bill
ADMRT	Air Dispersion Modeling and Risk Tool
ATIR	Air Toxics Inventory Report
CA	California
CARB	California Air Resources Board
CA-57	California Highway 57
Cd	cadmium
Co	cobalt
DBCP	1,2-dibromo-3-chloropropane
DEHP	bis(2-ethylhexy)phthalate
EDC	ethylene dichloride
GLC	Ground Level Concentration
HARP	Hot Spots Analysis and Reporting Program
HI	Hazard Index
hr	hour
HRA	Health Risk Assessment
Inc	Incorporated
KFUL	Fullerton Airport Weather Station
lb	pound
lb/hr	pound per hour
lb/yr	pound per year
m	meters
MDI	methylene diphenyl diisocyanate
MEIR	Maximum Exposed Individual Resident
MEIW	Maximum Exposed Individual Worker
µg/m ³	Microgram per cubic meter
MRLC	Multi-Resolution Land Characteristics Consortium
NED	National Elevation Dataset
NLDC	National Land Cover Database
OEHHA	Office of Environmental Health Hazard Assessments
PAHs	polycyclic aromatic hydrocarbons
PMI	Point of Maximum Impact
POM	polycyclic organic material
RECLAIM	REgional CLean Air Incentives Market
REL	Reference Exposure Level
RY	Reporting Year
SCAQMD:	South Coast Air Quality Management District
TACs	Toxic Air Contaminants
USEPA:	United States Environmental Protection Agency
UTM	Universal Transverse Mercator
WAF	Worker Adjustment Factor
WGS	World Geodetic System

Definitions

The definitions provided below were obtained from the Office of Environmental Health Hazard's (OEHHA's) Risk Assessment Guidelines (OEHHA, 2015).

Acute Health Impacts:

An acute health impact is an adverse health effect in a human population, including sensitive subgroups, resulting from exposure to concentrations of one or more chemicals for approximately one hour.

8-Hour Chronic Health Impacts

Eight-hour chronic health impacts are adverse health effects in a human population resulting from exposure to the general public that occur on recurrent basis, but only during a portion of the day (e.g. exposures that only occur while a receptor is clocked in at work.)

Chronic Health Impacts:

Chronic health impacts are adverse health effects in a human population, including sensitive subgroups, resulting from exposure to concentrations of one or more chemicals over a long period of time (e.g. thirty years.) These health effects may not appear right away, but may develop over time.

Cancer Health Impacts:

Cancer health impacts, also known as cancer risk, is the incremental increase in excess cancer incidences resulting from exposure to concentrations of one or more chemicals for a prolonged period of time. Cancer risks are often expressed in terms of "1 in a million," which indicates that exposure to a certain concentration of a chemical has the potential to result in one additional incidence of cancer in a million people.

EXECUTIVE SUMMARY

Facility Name: Kirkhill, Inc.
Physical Address: 300 E Cypress Street
Brea, CA 92821
Facility ID: 187823 (Formerly 1744)
Mailing Address: Same as Physical Address
Contact: Phu Nguyen
EH&S Manager
(714) 529-4901
pnguyen@kirkhill.com

Business Description: Rubber Manufacturing

1.1 Facility Operations and Site Description

The Kirkhill, Inc. (Kirkhill) facility is a rubber manufacturing facility located in Brea, California. The facility is located in Universal Transverse Mercator (UTM) Zone 11 at coordinates 417,400 meters East and 3,754,000 meters North, which is approximately one mile northwest of the California Highway 57 (CA-57) and California Highway 90 junction. The facility is located in Orange County, which has an urban modeling option population of 3,010,232 according to South Coast Air Quality Management District (SCAQMD) AERMOD Guidance (SCAQMD, 2019). The nearest school, Brea Junior High School, is located approximately 150 feet north of the Kirkhill facility at 400 N Brea Boulevard, Brea, CA 92821.

The facility is a Title V and RECLAIM facility, and consists of one main manufacturing building, a second manufacturing building, storage buildings, and parking lots. The facility is a rubber manufacturing facility that produces multiple types of rubbers for industries including aerospace manufacturing. The rubber manufacturing process includes raw material mixing, milling, pressing, and various types of curing. Finished products are stored, packaged, and shipped to customers. The sources of toxic air emissions (TACs) at the facility are the mixers, mills, presses, ovens, autoclave, and roto-curing devices. Emissions are controlled using electrostatic precipitators and/or baghouses. A facility plot plan is provided as Figure 1.

Facility emissions are summarized in Table 1, and multipathway substances and their associated pathways are provided in Table 2.

1.2 Overview of Dispersion Modeling and Exposure Assessment

Air dispersion modeling was performed to estimate ground level concentrations (GLCs) at and beyond the property boundary of the Facility. Modeling was performed using the United States Environmental Protection Agency's (USEPA's) AERMOD executable version 18081 via the

BREEZE AERMOD software. The following options were used in running the AERMOD model based on SCAQMD modeling guidelines, titled “Supplemental Guidelines for Preparing Risk Assessments for the Air Toxics ‘Hot Spots’ Information and Assessment Act” (SCAQMD, 2015).

- AERMOD was executed using the urban modeling option, which is SCAQMD policy for all air quality impact analyses in its jurisdiction.
- USEPA regulatory default options were implemented.
- The UTM, World Geodetic System (WGS) 1984 projection was implemented.

The Facility has a total area of approximately 17 acres. Per the SCAQMD guidelines, the maximum receptor spacing is 50 meters for facilities with total areas between 10 and 25 acres (SCAQMD, 2014). Fifty- (50-) meter spacing was used for fence-line receptors, and 50-meter spacing was used for receptors outside the property boundary. Additional receptors were added at 250-meter spacing to show impacts at larger distances away from the facility boundary.

The facility is bordered by commercial and industrial properties to the east and west and is bordered by residential properties to the north and south. Brea Junior High School and a residential neighborhood are located to the north of the facility, across Lambert Road, and a residential neighborhood is located to the south of the facility, across a bike path. Air dispersion modeling results in terms of period average and maximum one-hour concentration were exported as plot (.plt) files, and separate plot files were created for each source.

1.3 Overview of Dose-Response Assessment

Air dispersion modeling results (plot files) were imported into the California Air Resources Board’s (CARB’s) Hot Spots Analysis and Reporting Program (HARP) software. HARP2, Air Dispersion Modeling and Risk Tool (ADMRT) software version 17320 was utilized to perform the dose-response assessment. The dose-response assessment was performed in accordance with OEHHA’s “Air Toxics Hot Spots Program, Risk Assessment Guidelines” (OEHHA, 2015) and SCAQMD’s Supplemental Guidelines (SCAQMD, 2015). Dose for residential receptors was calculated assuming a 30-year exposure and the inhalation, soil ingestion, dermal absorption, mother’s milk, and home-grown produce exposure pathways. Dose for worker receptors was calculated assuming a 25-year exposure and the inhalation, soil ingestion, and dermal absorption exposure pathways. Annual and hourly TAC emissions for each source were entered into HARP, and each pollutant’s target organ system(s) for non-cancer health impacts are shown in Table 3.

HARP2 ADMRT was used to estimate the incremental increase in cancer risk, non-cancer chronic hazard index (HI), and non-cancer acute HI for all receptors. Using these results, the Point of Maximum Impact (PMI), Maximum Exposed Individual Resident (MEIR), and Maximum Exposed Individual Worker (MEIW) were identified, and their respective cancer risks, non-cancer chronic HIs, and non-cancer acute HIs were estimated. Risks for PMI purposes were estimated using residential exposure assumptions (residential exposure pathways, 30-year exposure, etc.).

1.4 Summary of Results

A summary of the HRA results is presented below. The HRA Summary Form is provided as Attachment 1.

1.4.1 Location

The PMI is located on the property fenceline along the northwest side of the facility. The MEIR is located to the northeast of the facility across Lambert Road, and the MEIW is located near at the neighboring facility located to the west of the facility. UTM coordinates for the PMI, MEIR, and MEIW are provided below, and maps of their locations are provided in Figure 2 through Figure 6.

Receptor	UTM X (m)	UTM Y (m)
PMI	417,356	3,754,101
MEIR	417,400	3,754,250
MEIW	417,350	3,754,100

1.4.2 Cancer Risk

The total potential multipathway cancer risks for the PMI, MEIR, and MEIW are approximately 421, 18.8, and 15.9 in one million, respectively. The cancer risk for the PMI and MEIR were calculated using the residential receptor exposure assumptions, which include the five exposure pathways addressed in Section 1.3 and a 30-year exposure scenario. The cancer risk for the MEIW was calculated using worker exposure assumptions, three exposure pathways (listed in Section 1.3) and a 25-year exposure scenario. The PMI is located on the facility boundary, and a residential receptor is not expected to reside there. Using the worker exposure scenario, the cancer risk at the PMI was estimated to be 21.9 in one million. Hexavalent chromium, benzidine, 1,3-butadiene, and acrylonitrile appear to drive the cancer risk. Cancer risk contribution for each substance at the MEIR and MEIW are provided in Table 4. Cancer risk isopleths are provided in Figure 2 and Figure 3.

1.4.3 Non-Cancer Hazard

The non-cancer chronic HIs for the PMI, MEIR, and MEIW are 0.12, 0.03, and 0.11, respectively. There are no clear risk drivers for chronic HI, but contributing substances include crystalline silica, acrolein, and toluene. The primary target organ for the non-cancer chronic HI is the respiratory system. Non-cancer chronic HI contribution by each substance at the MEIR and MEIW are provided in Table 5 and Table 6 respectively. Non-cancer chronic HI isopleths are provided in Figure 4.

The non-cancer acute HIs for the PMI, MEIR, and MEIW are 0.06, 0.01, and 0.05 respectively. Toluene and Acrolein appear to drive the non-cancer acute HI, and the primary target organ system is the respiratory system. Non-cancer acute HI contribution by each substance at the PMI, MEIR and MEIW are provided in Table 7, Table 8 and Table 9 respectively. The non-cancer acute HI isopleths are provided in Figure 5.

The non-cancer 8-hour chronic HI for the PMI is 0.02. Carbonyl sulfide appears to drive the non-cancer 8-hour chronic HI, and the primary target organ is the central nervous system.

1.4.4 Population Exposure

Population-wide cancer risk was estimated assuming a 70-year exposure scenario. Shown on Figure 6, the cancer risk of one in one million isopleth extends approximately one mile from the facility boundary. Census tract data for the surrounding data was obtained in order to calculate cancer burden. The average cancer risk for each census tract was determined and multiplied by the population for each respective tract to determine the overall cancer burden, which is approximately 0.078. The results are summarized in the table below, and a census tract map is provided as Figure 7.

Census Tract	Population	Cancer Risk			Cancer Burden
		Max	Min	Average	
06059001507	4,927	1.14E-05	1.00E-06	6.20E-06	0.031
06059001504	4,906	1.03E-05	4.53E-07	5.38E-06	0.026
06059001503	5,748	3.72E-06	2.11E-07	1.97E-06	0.011
06059001506	4,143	1.68E-06	1.32E-07	9.06E-07	0.004
Total:	19,724	--	--	--	0.072

1.4.5 Notification/Risk Reduction

The cancer risk at the MEIR and MEIW are both greater than 10 in one million. Therefore, notification will be required for the facilities and residencies within area of impact. The maximum cancer risk at the MEIR and MEIW are both below 25 in one million. Therefore, risk reduction is not required.

EXECUTIVE SUMMARY TABLES

Table 1
Facility Emissions Summary
Kirkhill Inc., Brea, CA

Substance Name	CAS	Annual Average Emissions	Maximum Hourly Emissions
		lb/yr	lb/hr
SILICA [CRYSTALLINE, RESPIRABLE]	1175	212.77	3.41E-02
Carbon tetrachloride	56235	45.91	7.36E-03
4-Dimethylaminoazobenzene [POM]	60117	0.01	1.64E-06
Aniline	62533	135.45	2.17E-02
Methanol	67561	1,585.86	2.54E-01
Benzene	71432	32.36	5.19E-03
Methylene chloride {Dichloromethane}	75092	30.13	4.83E-03
Carbon disulfide	75150	1,843.72	2.95E-01
Propylene oxide	75569	69.18	1.11E-02
Methyl ethyl ketone {2-Butanone}	78933	2,123.74	3.40E-01
Hexachlorobutadiene	87683	0.75	1.20E-04
Naphthalene [PAH, POM]	91203	5.13	8.23E-04
Quinoline	91225	258.64	4.14E-02
Biphenyl [POM]	92524	2.39	3.84E-04
Benzidine (and its salts) [POM]	92875	0.01	2.14E-06
1,2-Dibromo-3-chloropropane {DBCP}	96128	0.02	2.47E-06
Acetophenone	98862	173.15	2.77E-02
Methylene diphenyl diisocyanate {MDI} [POM]	101688	0.16	2.52E-05
Epichlorohydrin	106898	1.40	2.25E-04
1,3-Butadiene	106990	14.29	2.29E-03
Acrolein	107028	9.07	1.45E-03
Acrylonitrile	107131	9.89	1.58E-03
Methyl isobutyl ketone {Hexone}	108101	148.01	2.94E-02
Toluene	108883	8,293.05	1.33E+00
Diethylene glycol	111466	280.27	5.30E-01
Chloroprene	126998	12.58	2.02E-03
Carbonyl sulfide	463581	52.88	8.48E-03
2-Chloroacetophenone	532274	0.52	8.38E-05
Manganese	7439965	0.42	6.76E-05
Cadmium (Cd) Compounds	7440439	0.01	1.16E-06
Chromium	7440473	0.07	1.09E-05
Copper	7440508	1.01	1.61E-04
Zinc	7440666	1.70	2.72E-04
Ammonia	7664417	258.59	4.14E-02
Chromium, hexavalent (and compounds)	18540299	0.03	5.47E-06
Dipropylene glycol monomethyl ether	34590948	1,418.00	2.28E-02

**Table 3
Target Organs for Each Substance
Kirkhill Inc., Brea, CA**

Substance Name	CAS	Chronic Hazard Target Organs	Acute Hazard Target Organs
SILICA [CRYSTALLINE, RESPIRABLE]	1175	Respiratory system	-
Carbon tetrachloride	56235	Alimentary system (liver), development, nervous system	Reproductive/ developmental, alimentary system (liver), nervous system
4-Dimethylaminoazobenzene [POM]	60117	-	-
Aniline	62533	-	-
Methanol	67561	Development	Central nervous system
Benzene	71432	Hematologic system, nervous system, development	Reproductive/ development, immune system, hematologic system
Methylene chloride {Dichloromethane}	75092	Cardiovascular system, nervous system	Cardiovascular system, nervous system
Carbon disulfide	75150	Nervous system, reproductive system	Reproductive/ development, nervous system
Propylene oxide	75569	Respiratory system	Reproductive/ development, respiratory system, eyes
Methyl ethyl ketone {2-Butanone}	78933	-	Respiratory system, eyes
Hexachlorobutadiene	87683	-	-
Naphthalene [PAH, POM]	91203	Respiratory system	-
Quinoline	91225	-	-
Biphenyl [POM]	92524		
Benzidine (and its salts) [POM]	92875	-	-
1,2-Dibromo-3-chloropropane {DBCP}	96128	-	-
Acetophenone	98862	-	-
Methylene diphenyl diisocyanate {MDI} [POM]	101688	Respiratory system	Respiratory system
Epichlorohydrin	106898	Respiratory system, eyes	Respiratory system, eyes
1,3-Butadiene	106990	Reproductive system	Development
Acrolein	107028	Respiratory system	Respiratory system, eyes
Acrylonitrile	107131	Respiratory system	-
Methyl isobutyl ketone {Hexone}	108101	-	-
Toluene	108883	Nervous system, respiratory system, development	Reproductive/ development, nervous systems, respiratory system, eyes
Diethylene glycol	111466	-	-
Chloroprene	126998	-	-
Carbonyl sulfide	463581	-	-
2-Chloroacetophenone	532274	-	-
Manganese	7439965	Nervous system	-
Cadmium (Cd) Compounds	7440439	Inhalation: Kidney, respiratory system. Oral: Kidney	-
Chromium	7440473	-	-
Copper	7440508	-	Respiratory system
Zinc	7440666	-	-
Ammonia	7664417	Respiratory system	Respiratory system; eyes
Chromium, hexavalent (and compounds)	18540299	Inhalation: Respiratory system. Oral: Hematologic system	-
Dipropylene glycol monomethyl ether	34590948	-	-

Table 4
Cancer Risk Contribution by Substance
Kirkhill Inc., Brea, CA

CAS	Substance Name	MEIR	MEIW
1175	SILICA [CRYSTALLINE, RESPIRABLE]	--	--
56235	Carbon tetrachloride	3.93E-07	4.23E-08
60117	4-Dimethylaminoazobenzene [POM]	2.64E-09	2.23E-10
62533	Aniline	2.23E-07	7.02E-08
67561	Methanol	--	--
71432	Benzene	5.62E-07	2.14E-07
75092	Methylene chloride {Dichloromethane}	2.89E-08	2.20E-08
75150	Carbon disulfide	--	--
75569	Propylene Oxide	2.47E-07	8.06E-08
78933	Methyl ethyl ketone {2-Butanone}	--	--
87683	Hexachlorobutadiene	--	--
91203	Naphthalene [PAH, POM]	1.19E-07	5.91E-08
91225	Quinoline	--	--
92524	Biphenyl [POM]	--	--
92875	Benzidine (and its salts) [POM]	1.96E-06	2.23E-06
96128	1,2-Dibromo-3-chloropropane {DBCP}	2.41E-08	1.21E-08
98862	Acetophenone	--	--
101688	Methylene diphenyl diisocyanate {MDI} [POM]	--	--
106898	Epichlorohydrin	3.67E-08	2.64E-08
106990	1,3-Butadiene	2.22E-06	7.49E-07
107028	Acrolein	--	--
107131	Acrylonitrile	2.03E-06	3.73E-07
108101	Methyl isobutyl ketone {Hexone}	--	--
108883	Toluene	--	--
111466	Diethylene glycol	--	--
126998	Chloroprene	--	--
463581	Carbonyl Sulfide	--	--
532274	2-Chloroacetophenone	--	--
7439965	Manganese	--	--
7440439	Cadmium (Cd) Compounds	6.08E-09	5.66E-10
7440473	Chromium	--	--
7440508	Copper	--	--
7440666	Zinc	--	--
7664382	Phosphoric Acid	--	--
7664417	Ammonia	--	--
18540299	Chromium, hexavalent (and compounds)	1.10E-05	1.20E-05
34590948	Dipropylene glycol monomethyl ether	--	--
Total		1.88E-05	1.59E-05

EXECUTIVE SUMMARY FIGURES



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Prepared For:
Kirkhill, Inc.

300 E. Cypress St
Brea, CA 92821
Facility ID: 187823



FIGURE 1 - Site Plot Plan

Legend

- Point Source
- Volume Source
- Area Source
- Kirkhill Site Boundary
- Building Outlines

Datum: WGS 1984
Projection: UTM Zone 11N

0 30 60

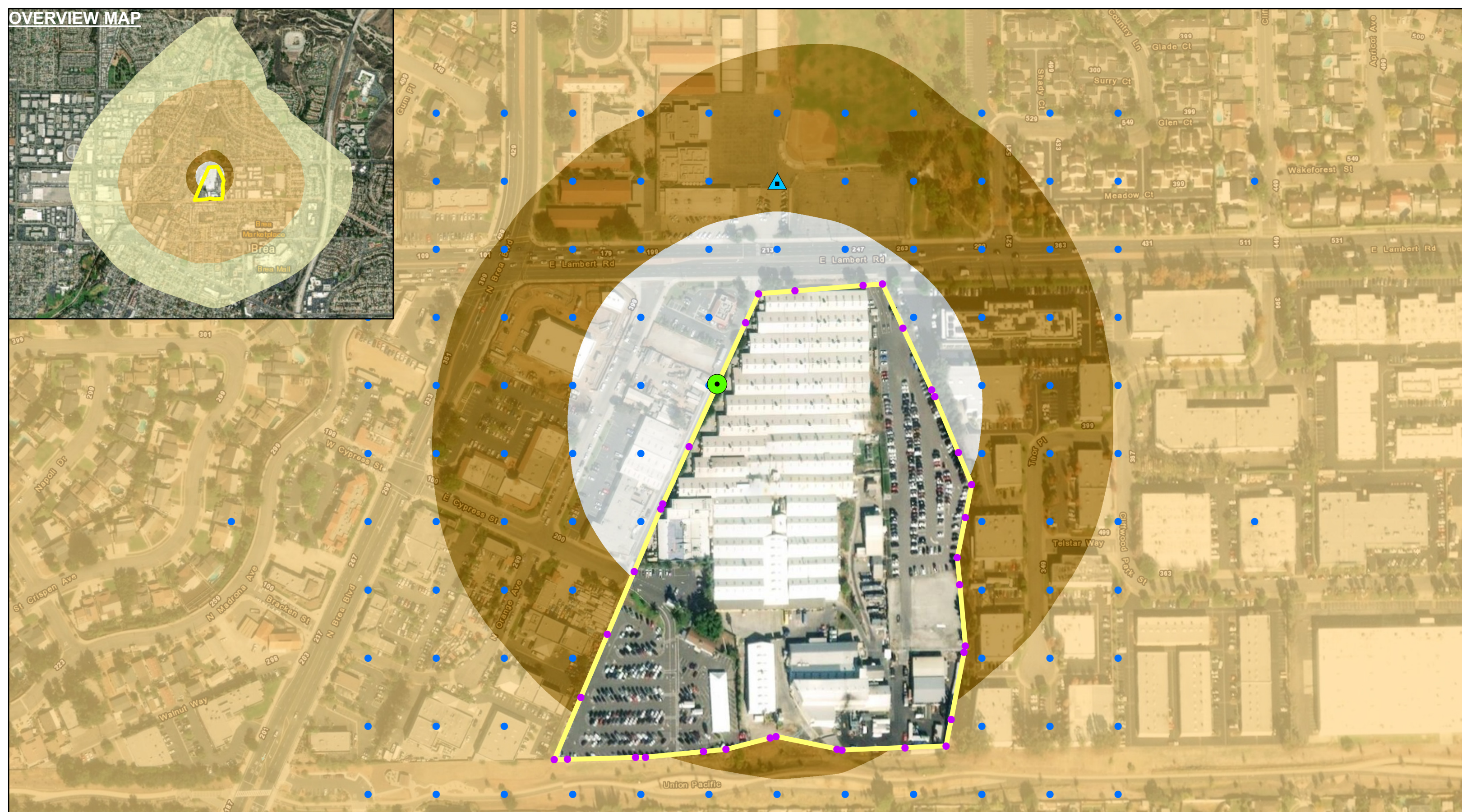
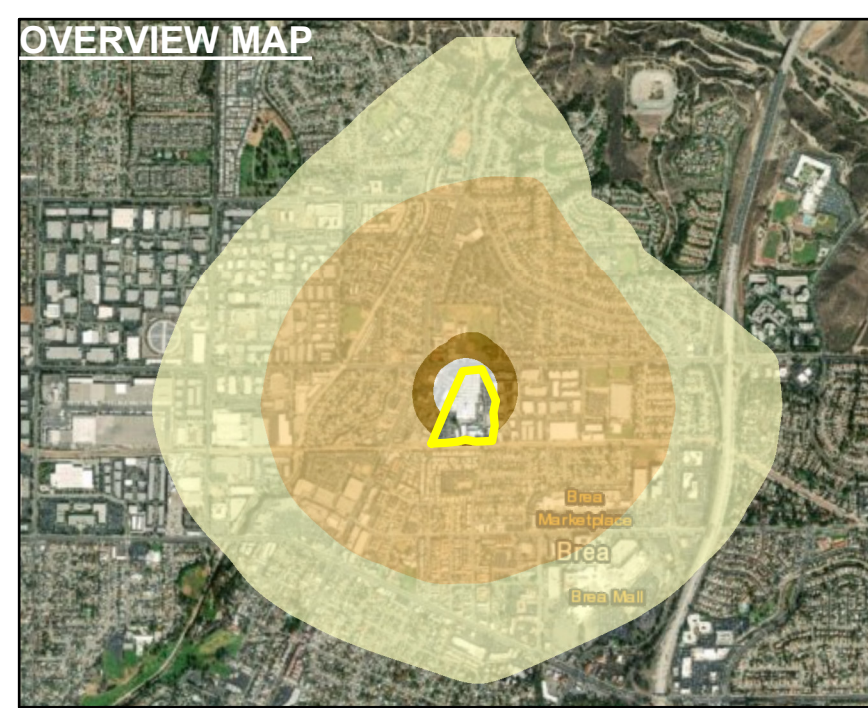
— Meters

0 0.05 0.1

— Miles

N

OVERVIEW MAP



Prepared For:
Kirkhill, Inc.






300 E. Cypress St
Brea, CA 92821
Facility ID: 187823

 **ALTA**
ENVIRONMENTAL

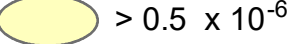
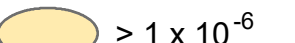
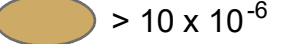
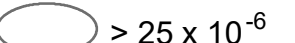
Alta Environmental
3777 Long Beach Blvd Annex Bldg
Long Beach, CA 90807
562.495.5777 www.altaenviron.com

**FIGURE 2 - Cancer Risk Isopleths:
30-Year Residential Exposure Scenario**

Legend

-  PMI
-  MEIR
-  Kirkhill Site Boundary
-  Receptor Locations
-  Border Receptors

Cancer Isopleths


-  $> 0.5 \times 10^{-6}$
-  $> 1 \times 10^{-6}$
-  $> 10 \times 10^{-6}$
-  $> 25 \times 10^{-6}$

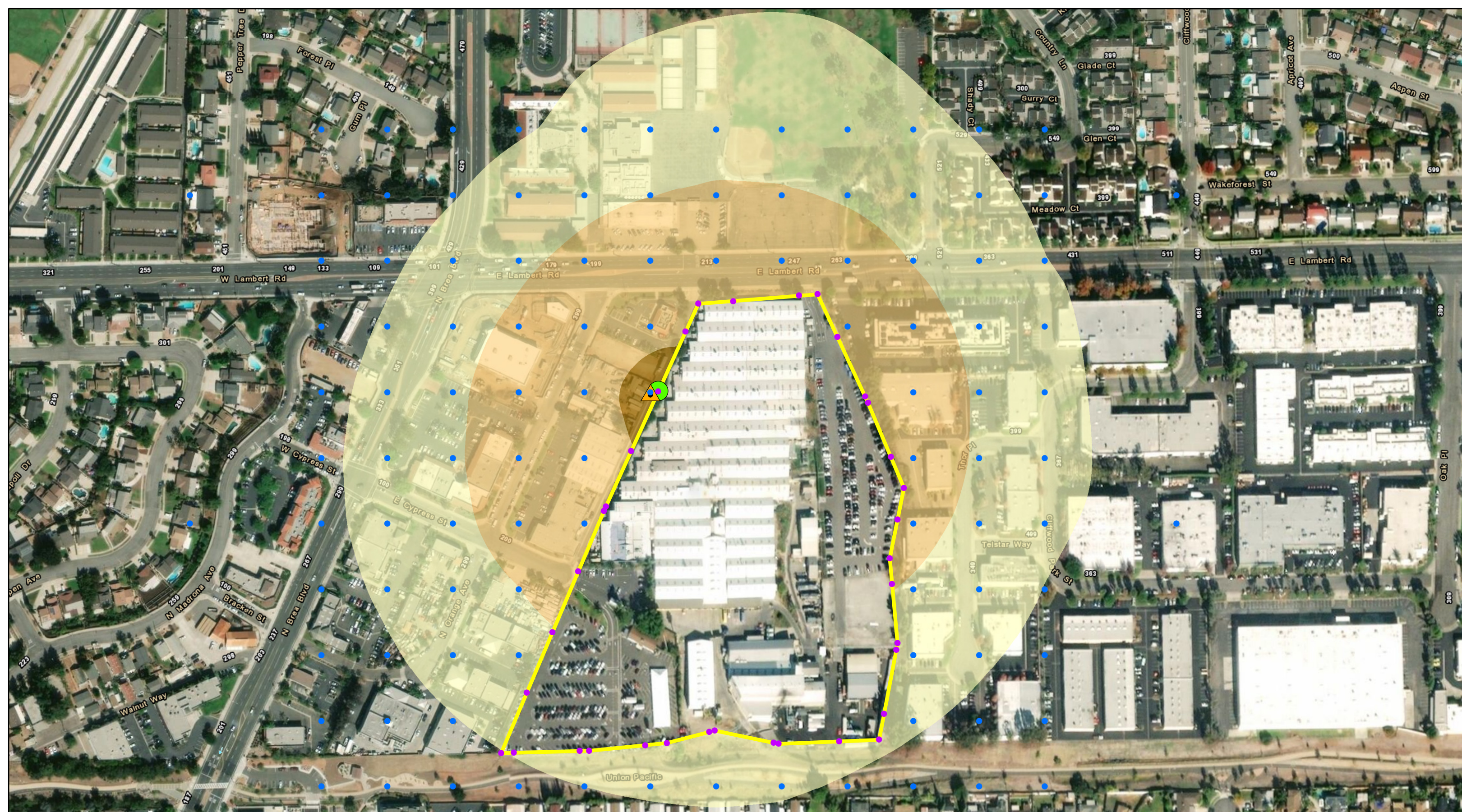
Datum: WGS 1984
Projection: UTM Zone 11N

1 inch = 208 feet

0 60 120 Meters

0 0.05 0.1 Miles





**FIGURE 3 - Cancer Risk Isopleths:
25-Year Worker Exposure Scenario**

Datum: WGS 1984
Projection: UTM Zone 11N

Prepared For:
Kirkhill, Inc.

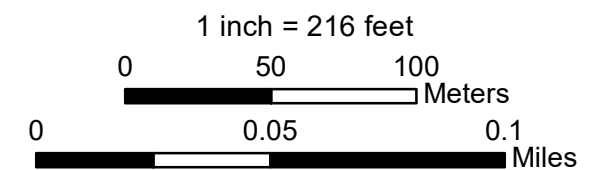


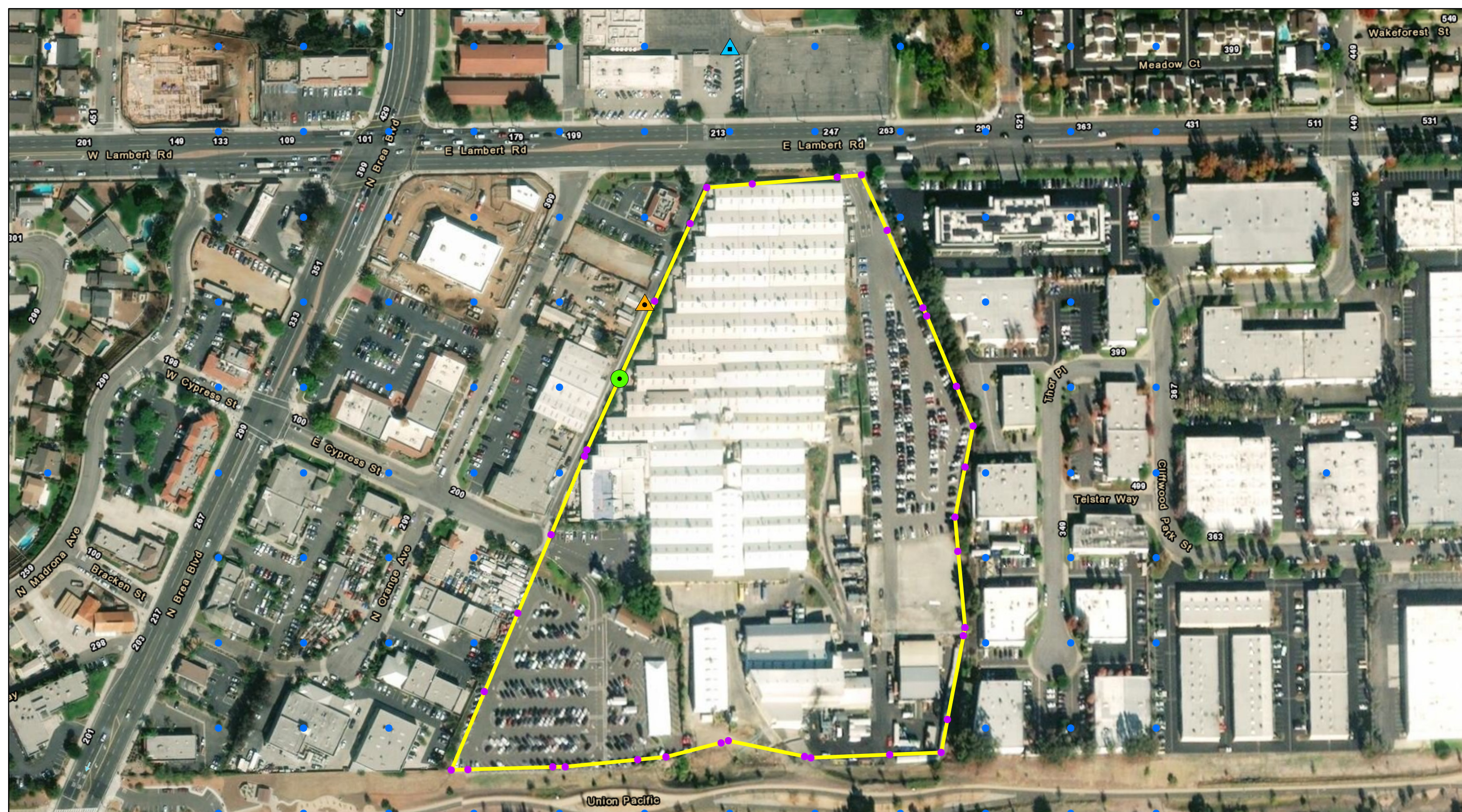
300 E. Cypress St
Brea, CA 92821
Facility ID: 187823

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Legend

- PMI
- MEIW
- Kirkhill Site Boundary
- Receptor Locations
- Border Receptors
- > 0.5 x 10⁻⁶
- > 1 x 10⁻⁶
- > 10 x 10⁻⁶



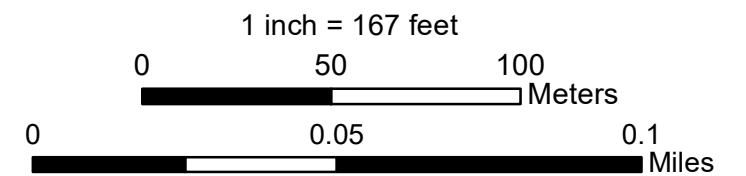


**FIGURE 4 - Non-Cancer Isopleths:
Non-Cancer Chronic Hazard Index Residential Scenario**

All values below 0.5

- Legend**
- PMI
 - ▲ MEIW
 - ▲ MEIR
 - Kirkhill Site Boundary
 - Receptor Locations
 - Border Receptors

Datum: WGS 1984
Projection: UTM Zone 11N

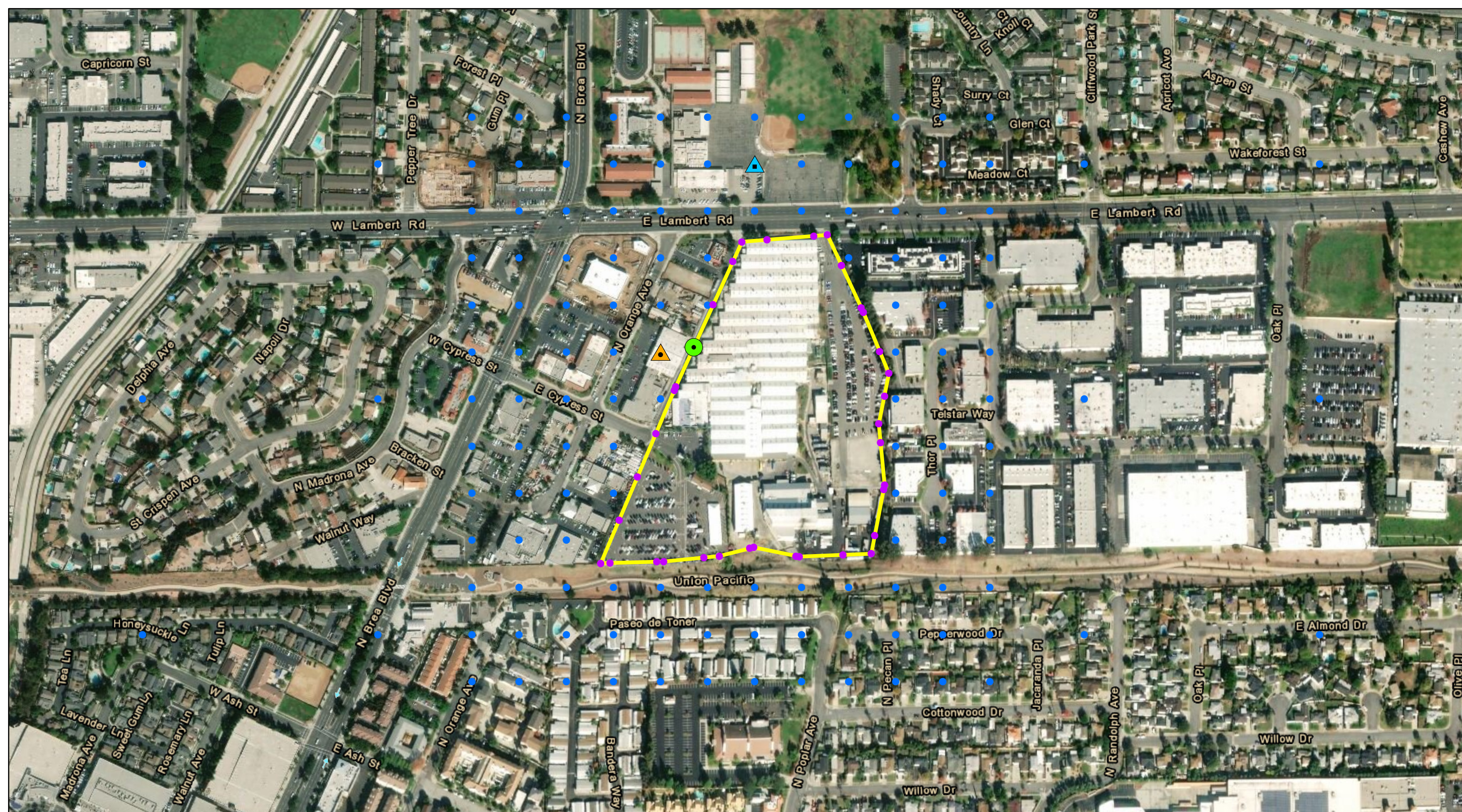


Prepared For:
Kirkhill, Inc.



300 E. Cypress St
Brea, CA 92821
Facility ID: 187823

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**FIGURE 5 - Non-Cancer Isopleths:
Non-Cancer Acute Hazard Index Scenario**

All values below 0.5

- Legend**
- PMI
 - ▲ MEIR
 - ▲ MEIW
 - Kirkhill Site Boundary
 - Receptor Locations
 - Border Receptors

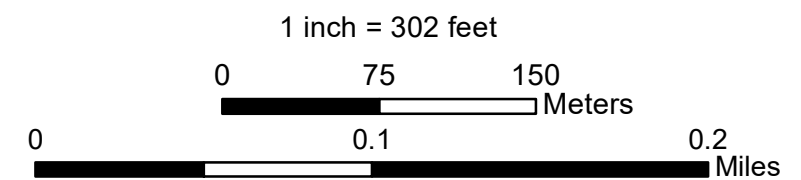
Prepared For:
Kirkhill, Inc.

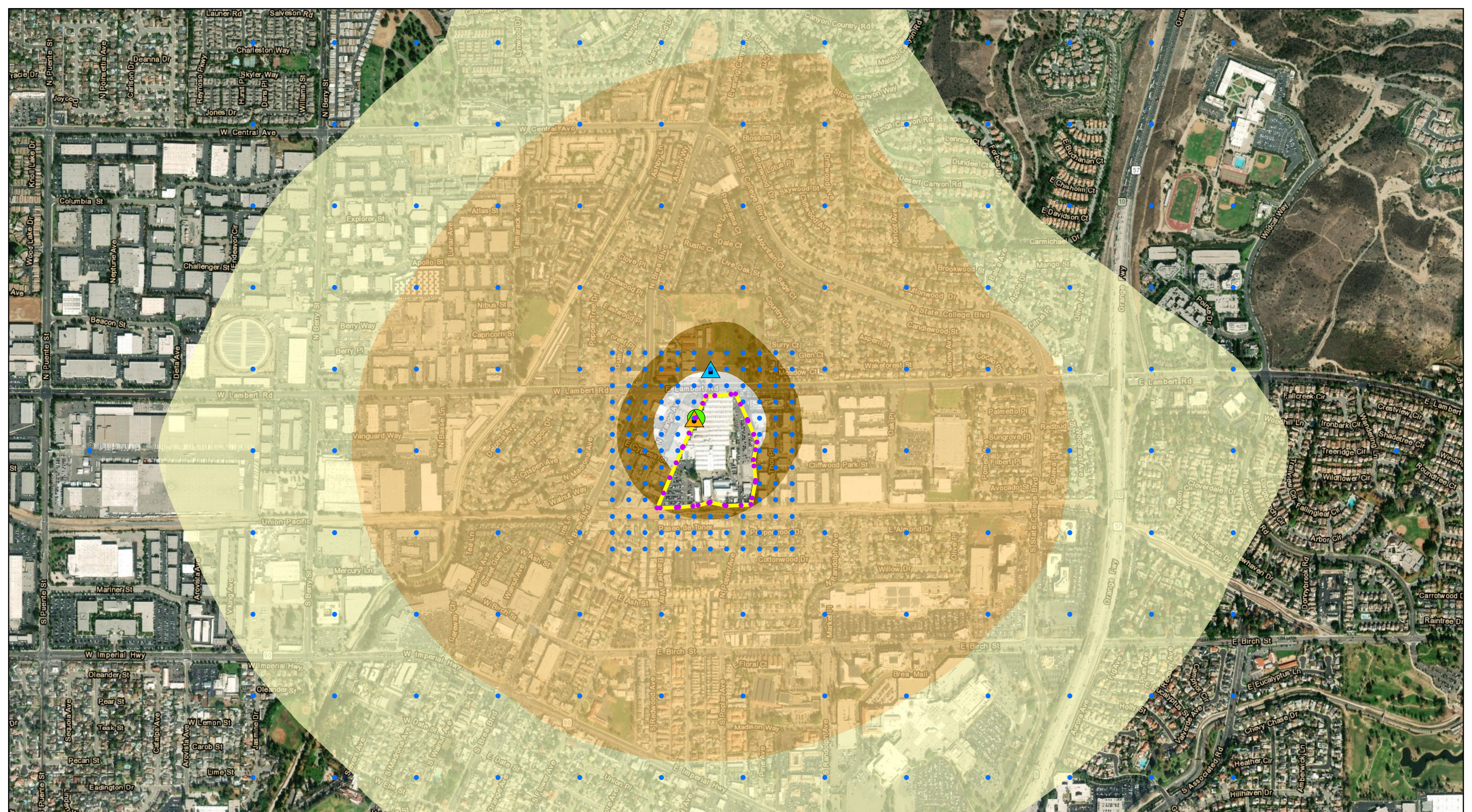


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Datum: WGS 1984
Projection: UTM Zone 11N





**FIGURE 6 - Cancer Risk Isopleths:
70-Year Population-Wide Exposure Scenario**

Datum: WGS 1984
Projection: UTM Zone 11N

Prepared For:
Kirkhill, Inc.

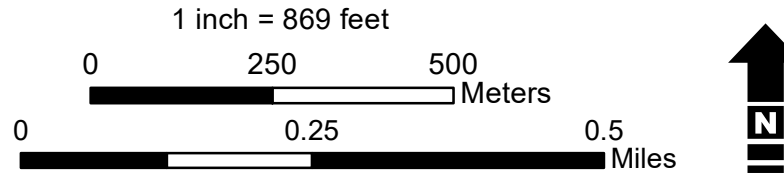
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Legend		Cancer Isopleths	
PMI	Kirkhill Site Boundary	> 0.5 x 10 ⁻⁶	> 10 x 10 ⁻⁶
MEIR	Receptor Locations	> 1 x 10 ⁻⁶	> 25 x 10 ⁻⁶
MEIW	Border Receptors		

1 inch = 869 feet



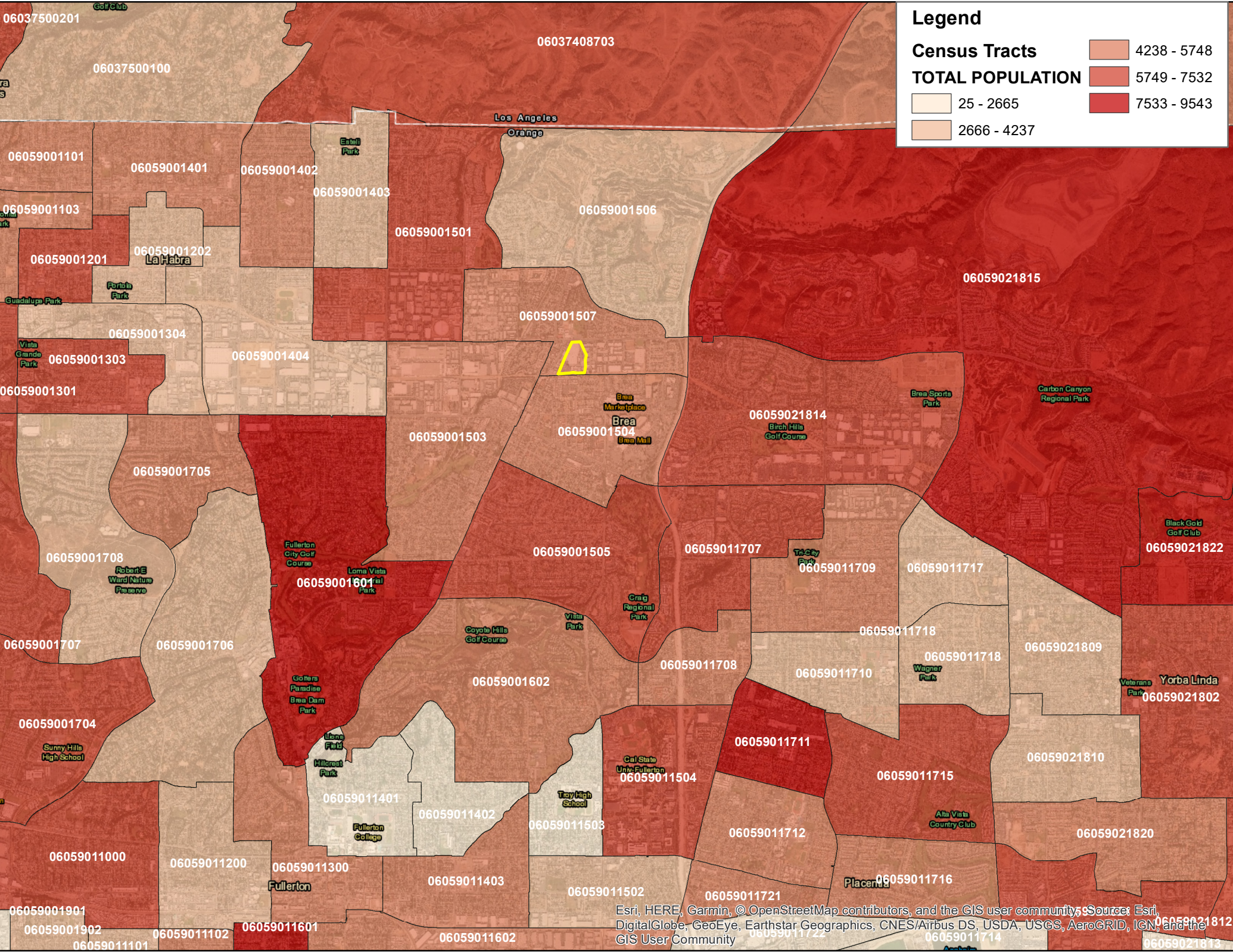
0 250 500 Meters

0 0.25 0.5 Miles



Legend

Census Tracts	
4238 - 5748	5749 - 7532
25 - 2665	7533 - 9543
2666 - 4237	



2.0 BACKGROUND

2.1 Regulatory Framework

Assembly Bill (AB) 2588 is a California state-wide program that was enacted in order to collect emissions data, identify facilities with TAC emissions that may result in localized health impacts, notify nearby residents of potential significant risks, and reduce significant risks to acceptable levels. Facilities that are subject to the AB2588 program must submit an air toxics inventory to the local air district every four years.

The Brea Facility is subject to the AB2588 program and submitted its latest quadrennial toxics emissions inventory for Reporting Year (RY) 2015. Based on the emissions reported in this quadrennial emissions inventory, SCAQMD sent the Brea Facility a “Notice to Prepare Air Toxics Inventory Report” dated January 31, 2018.

Kirkhill, Inc. (Kirkhill) submitted an Air Toxics Inventory Report (ATIR) on July 3, 2018. SCAQMD staff provided comments, which included a request for a revised ATIR. The revised ATIR was reviewed and approved on October 16, 2018. A subsequent Health Risk Assessment (HRA) pursuant to SCAQMD Rule 1402 was requested by SCAQMD in a letter dated October 19, 2018.

2.2 Facility Setting

The Kirkhill facility is located in UTM Zone 11 at coordinates 417,400 meters East and 3,754,000 meters North, which is approximately one mile northwest of the California Highway 57 (CA-57) and California Highway 90 junction. The facility is located in Orange County, which has an urban modeling option population of 3,010,232 according to SCAQMD AERMOD Guidance (SCAQMD, 2019). The nearest school, Brea Junior High School, is located approximately 150 feet north of the Kirkhill facility at 400 N Brea Boulevard, Brea, CA 92821.

The Facility has a total area of approximately 17 acres. The facility is mostly bordered by commercial and industrial properties to the east and west and is bordered by residential properties to the north and south. Brea Junior High School and a residential neighborhood are located to the north of the facility, across Lambert Road, and a residential neighborhood is located to the south of the facility, across a bike path. SCAQMD requires schools to be identified as sensitive receptors. Brea Junior High School has been identified as a sensitive receptor. Air dispersion modeling results in terms of period average and maximum one-hour concentration were exported as plot (.plt) files, and separate plot files were created for each source.

3.0 HAZARD IDENTIFICATION

The facility is a rubber manufacturing facility that produces multiple types of rubbers for industries including aerospace manufacturing. The rubber manufacturing process includes raw material mixing, milling, pressing, and various types of curing. Finished products are stored, packaged, and shipped to customers. The sources of TACs at the facility are the mixers, mills, presses, ovens, autoclave, and roto-curing devices. Emissions are controlled using electrostatic precipitators and/or baghouses.

The following TACs are emitted at the facility and were evaluated for cancer risk and/or non-cancer health impacts:

CAS	Pollutant Name
1175	Silica [crystalline, respirable]
56235	Carbon tetrachloride
60117	4-Dimethylaminoazobenzene [POM]
62533	Aniline
67561	Methanol
71432	Benzene
75092	Methylene chloride {Dichloromethane}
75150	Carbon disulfide
75569	Propylene oxide
78933	Methyl ethyl ketone {2-Butanone}
87683	Hexachlorobutadiene
91203	Naphthalene [PAH, POM]
91225	Quinoline
92524	Biphenyl [POM]
92875	Benzidine (and its salts) [POM]
96128	1,2-Dibromo-3-chloropropane {DBCP}
98862	Acetophenone
101688	Methylene diphenyl diisocyanate {MDI} [POM]
106898	Epichlorohydrin
106990	1,3-Butadiene
107028	Acrolein
107131	Acrylonitrile
108101	Methyl isobutyl ketone {Hexone}
108883	Toluene
111466	Diethylene glycol
126998	Chloroprene
463581	Carbonyl sulfide
532274	2-Chloroacetophenone
7439965	Manganese
7440439	Cadmium (Cd) Compounds
7440473	Chromium
7440508	Copper
7440666	Zinc
7664417	Ammonia

CAS	Pollutant Name
18540299	Chromium, hexavalent (and compounds)
34590948	Dipropylene glycol monomethyl ether

The facility emits additional TACs in quantities below the de minimis thresholds for inclusion in an HRA. As determined during the ATIR, the following substances are emitted from the facility but not evaluated for cancer risk or non-cancer health impacts because they are emitted in quantities below the de minimis thresholds:

CAS	Pollutant Name
1151	Total PAHs (except Naphthalene)
50000	Formaldehyde
51285	2,4-Dinitrophenol
62759	N-Nitrosodimethylamine
67663	Chloroform
67721	Hexachloroethane
71556	Methyl chloroform {1,1,1-Trichloroethane}
74839	Methyl bromide {Bromomethane}
74873	Methyl chloride {Chloromethane}
75003	Ethyl chloride {Chloroethane}
75014	Vinyl chloride
75058	Acetonitrile
75070	Acetaldehyde
75252	Bromoform
75354	Vinylidene chloride
78591	Isophorone
79016	Trichloroethylene
79345	1,1,2,2-Tetrachloroethane
84742	Dibutyl phthalate
86306	N-Nitrosodiphenylamine
87865	Pentachlorophenol
92671	4-Aminobiphenyl [POM]
92933	4-Nitrobiphenyl [POM]
95476	o-Xylene
95487	o-Cresol
95534	o-Toluidine
95636	1,2,4-Trimethylbenzene
98828	Cumene
98953	Nitrobenzene
100027	4-Nitrophenol
100414	Ethyl benzene
100425	Styrene
100447	Benzyl chloride
106423	p-Xylene
106467	p-Dichlorobenzene {1,4-Dichlorobenzene}

CAS	Pollutant Name
107062	Ethylene dichloride {EDC, 1,2-Dichloroethane}
107982	Propylene glycol monomethyl ether
108054	Vinyl acetate
108383	m-Xylene
108907	Chlorobenzene
108952	Phenol
110543	Hexane
111762	Ethylene glycol monobutyl ether
111900	Diethylene glycol monoethyl ether
112345	Diethylene glycol monobutyl ether
117817	Di(2-ethylhexyl) phthalate {DEHP}
120821	1,2,4-Trichlorobenzene
121697	N,N-Dimethylaniline
123319	Hydroquinone
123386	Propionaldehyde
123911	1,4-Dioxane
127184	Perchloroethylene {Tetrachloroethene}
131113	Dimethyl phthalate
132649	Dibenzofuran [POM]
140885	Ethyl acrylate
540841	2,2,4-Trimethylpentane
1314132	Zinc oxide
1330207	Xylenes (mixed)
1344281	Aluminum oxide
1634044	Methyl tert-butyl ether
7429905	Aluminum
7439921	Lead
7440484	Cobalt (Co) Compounds
7647010	Hydrochloric acid
7664382	Phosphoric acid
7782505	Chlorine
25265718	Dipropylene glycol

4.0 EXPOSURE ASSESSMENT

4.1 Site Description and Facility Operations

Facility Name: Kirkhill, Inc.
Physical Address: 300 E Cypress Street
Brea, CA 92821
Facility ID: 187823 (Formerly 1744)

The Kirkhill, Inc. (Kirkhill) facility is a rubber manufacturing facility located in Brea, California. The facility is located in Universal Transverse Mercator (UTM) Zone 11 at coordinates 417,400 meters East and 3,754,000 meters North, which is approximately one mile northwest of CA-57 and California Highway 90 junction. The facility is located in Orange County, which has an urban modeling option population of 3,010,232 according to SCAQMD AERMOD Guidance (SCAQMD, 2019). The nearest school, Brea Junior High School, is located approximately 150 feet north of the Kirkhill facility at 400 N Brea Boulevard, Brea, CA 92821.

The facility is a Title V and RECLAIM facility, and consists of one main manufacturing building, a second manufacturing building, storage buildings, and parking lots. The facility is a rubber manufacturing facility that produces multiple types of rubbers for industries including aerospace manufacturing. The rubber manufacturing process includes raw material mixing, milling, pressing, and various types of curing. Finished products are stored, packaged, and shipped to customers. The sources of toxic air emissions (TACs) at the facility are the mixers, mills, presses, ovens, autoclave, and roto-curing devices. Emissions are controlled using electrostatic precipitators, scrubbers, filters, and/or baghouses. A facility plot plan is provided as Figure 1.

The facility does not have any extraordinary features that would result in any site/route dependent exposure pathways besides the default exposure pathways.

4.2 Emissions Estimates

The list of sources with TAC emissions is provided in Table 10. Source release parameters were obtained from on-site measurements, equipment specifications, and facility personnel's knowledge of the facility. Source parameters, such as name, location, release height, etc. are provided in Table 11. Annual emissions in pounds per year (lb/yr) and hourly emissions in pounds per hour (lb/hr), and hourly emissions in grams per second (g/s) for each source are provided in Table 12, 13, and 14, respectively. Please note that only pollutants above the de minimis thresholds are included in Tables 12 through 14. Total facility emissions in lb/yr and lb/hr are summarized in Table 1.

4.3 Air Dispersion Modeling

Air dispersion modeling was performed to estimate GLCs at and beyond the property boundary of the Facility. USEPA's AERMOD executable version 18081 via the BREEZE AERMOD software. AERMOD input (.ami) and output (.amz) files are provided as part of this HRA.

4.3.1 Meteorological Data

AERMOD-ready meteorological data were obtained from SCAQMD. Data from the Fullerton Airport (KFUL) meteorological station were selected as the Fullerton Airport station is the closest to the Kirkhill Facility. Data at KFUL are available for years 2012 through 2016. There are no intervening terrain features between KFUL and the Kirkhill facility. The surface (.sfc) and profile (.pfl) files are provided electronically as part of this HRA.

4.3.2 Terrain Data

Surface elevations for the various modeling objects in the modeling domain were imported from National Elevation Dataset (NED) files developed by the United States Geological Survey (USGS). NED files are available in 1-arc second resolution. A NED file obtained from the Multi-Resolution Land Characteristics Consortium (MRLC) National Land Cover Database (NLDC) was used in the air dispersion modeling.

4.3.3 Model Options

The following options were used in running the AERMOD model based on SCAQMD modeling guidelines.

- AERMOD was executed using the urban modeling option, which is SCAQMD policy for all air quality impact analyses in its jurisdiction. The default population for Orange County, 3,010,232 was selected.
- USEPA regulatory default options were implemented.
- The UTM, WGS 1984 projection was implemented.
- The pollutant was set to "Other"
- Regulatory default concentration only, was used, and no depletion options were selected.

4.3.4 Receptors

The Facility has a total area of approximately 17 acres. Per the SCAQMD guidelines, the maximum receptor spacing is 50 meters for facilities with total areas between 10 and 25 acres (SCAQMD, 2019). Fifty- (50-) meter spacing was used for fence-line receptors, and 50-meter spacing was used for receptors outside the property boundary. Additional receptors were added at 250-meter spacing to show impacts at larger distances away from the facility boundary. All residential receptors were identified as sensitive receptors in AERMOD. Table 15 lists the location in UTM coordinates for each receptor.

The period average concentration for each substance at the PMI, MEIR, and MEIW are provided in Table 16, and the maximum one-hour concentration for each substance at the PMI, MEIR, and MEIW are provided in Table 17.

5.0 RISK CHARACTERIZATION

Air dispersion modeling results (plot [.plt] files) were imported into CARB's HARP software. HARP2 ADMRT software version 17320 was utilized to perform the dose-response assessment and calculate the potential cancer risk non-cancer health impacts for the various receptors surrounding the Kirkhill facility. The dose-response assessment and risk calculations were performed in accordance with OEHHA's Risk Assessment Guidelines (OEHHA, 2015) and SCAQMD's Supplemental Guidelines (SCAQMD, 2015).

5.1 Exposure Assessment

5.1.1 Identification of Potentially Exposed Populations

The facility is bordered by commercial and industrial properties to the east and west and is bordered by residential properties to the north and south. Brea Junior High School and a residential neighborhood are located to the north of the facility, across Lambert Road, and a residential neighborhood is located to the south of the facility, across a bike path. SCAQMD requires schools to be identified as sensitive receptors. Brea Junior High School has been identified as a sensitive receptor. Table 14 lists the location in UTM coordinates for all receptors.

5.1.2 Exposure Pathways

5.1.2.1 Residents

The residential neighborhoods located near the Kirkhill facility are typical suburban residential communities. Therefore, the following default residential exposure pathways were included in this HRA:

- Inhalation
- Soil ingestion
- Dermal absorption
- Mother's Milk
- Home Grown Produce

No site- or receptor-specific exposure pathways were identified within the residential neighborhoods.

5.1.2.2 Off-Site Workers

As stated above, the facility is bordered by commercial and industrial properties to the east and west. The following default worker exposure pathways were included in this HRA:

- Inhalation
- Soil ingestion
- Dermal absorption

5.1.3 HARP Exposure Analysis Methods and Assumptions

Cancer and non-cancer health impacts may be evaluated in HARP. Cancer risk is expressed as a theoretical probability of an individual person developing cancer as a result of exposure to carcinogenic substances. Noncancer risk is expressed with a hazard index number (HI) for

pollutant-targeted organ systems: the cardiovascular system, central nervous system, immune system, kidneys, gastrointestinal tract and liver, reproductive/developmental system, respiratory system, skin, eyes, skeletal system, endocrine system, hematological system, physiological response to odors, and general toxicity (CARB, 2018). Calculations built into HARP2 ADMRT are based on the dose and risk calculation methodologies and pollutant risk factors contained within the OEHHA Risk Assessment Guidelines.

According to the OEHHA and SCAQMD guidelines, different exposure scenarios should be used for residential and worker receptors. Exposure scenarios and assumptions for residential and worker receptors are identified in the following sections.

5.1.3.1 Resident

For notification and risk reduction purposes, a 30-year exposure scenario is used for residential receptors. The following additional parameters were selected in HARP:

- Receptor Type: Individual Resident
- Intake Rate Percentile: OEHHA Derived Method (when applicable)
- Exposure Frequency: 350 days per year
- Deposition Rate: 0.02 meters per second

For population-based exposure and cancer burden calculation purposes, a 70-year exposure scenario was used for residential receptors. All other parameters remained the same.

5.1.3.2 Off-Site Workers

For notification and risk reduction purposes, a 25-year exposure scenario is used for residential receptors. The following additional parameters were selected in HARP:

- Receptor Type: Worker
- Intake Rate Percentile: OEHHA Derived Method (when applicable)
- Exposure Frequency: 250 days per year
- Deposition Rate: 0.02 meters per second

The Kirkhill Facility is operational 24 hours per day, 7 days per week. Therefore, the Worker Adjustment Factor (WAF) is 1.0.

5.2 Dose-Response Assessment

According to OEHHA, dose-response assessment describes the quantitative relationship between the amount of exposure to a substance (the dose) and the incidence or occurrence of an adverse health impact (the response). Dose-response information for noncancer health effects is used to determine Reference Exposure Levels (RELs). Dose-response information for cancer risks are based on cancer potency factors (OEHHA, 2015). Chronic RELs, 8-hour Chronic RELs, Acute RELs, and cancer potency factors for each pollutant are listed in the OEHHA Guidelines and built into HARP2. These values are periodically updated, and new versions of HARP2 incorporate the changes.

5.3 Risk Characterization Methodology

Risks are characterized using calculations and methodology contained in the OEHHA Guidelines and built into HARP2. Risk is calculated based on dose, dose-response values (RELs or cancer potency factors), and exposure duration and frequency. For this HRA, all risks were calculated using a Tier 1 approach using OEHHA and SCAQMD default values.

5.3.1 Carcinogenic Risks

For notification and risk reduction purposes, a 30-year exposure scenario is used for residential receptors and a 25-year exposure scenario is used for worker receptors. For population-based exposure, a 70-year exposure scenario was used. The additional assumptions used for residential and worker receptor risk characterization are provided in Section 5.1.3. This HRA is a Tier 1 assessment where OEHHA and SCAQMD defaults were used. Carcinogenic risks are calculated for each receptor by calculating the dose of each pollutant at that receptor then following the calculation methodology in Section 8 of the OEHHA Guidelines. Multipathway risks are accounted for within HARP2 and follow the methodology in the guidelines.

5.3.2 Chronic Non-cancer Hazards

For notification and risk reduction purposes, a 30-year exposure scenario is used for residential receptors and a 25-year exposure scenario is used for worker receptors. Chronic hazards are calculated using the period average ground level concentration of each pollutant compared to the chronic REL for each pollutant. The sum of the HIs for each pollutant is the total chronic HI for each receptor.

5.3.3 Acute Non-cancer Hazards

Acute non-cancer hazards are identical for residential and non-residential (worker) receptors. Therefore, only one set of methodology was utilized for acute non-cancer hazard index calculation. Acute hazards are calculated using the maximum 1-hour ground level concentration of each pollutant compared to the acute REL for each pollutant. The sum of the HIs for each pollutant is the total acute HI.

5.4 Risk Characterization Results

5.4.1 Cancer Risks

The following table summarizes the potential cancer risks at the PMI, MEIR, and MEIW.

Receptor	UTM X (m)	UTM Y (m)	Cancer Risk
PMI	417,356	3,754,101	421 in one million ¹
MEIR	417,400	3,754,250	18.8 in one million
MEIW	417,350	3,754,100	15.9 in one million

1. The cancer risk at the PMI presented above assumes the residential receptor exposure scenario. The PMI is located on the facility fenceline where residential receptors do not exist. Under the worker receptor exposure scenario, the cancer risk at the PMI is 21.9 in one million.

Hexavalent chromium, benzidine, 1,3-butadiene, and acrylonitrile appear to drive the cancer risk. The cancer risk contribution for each substance at the MEIR and MEIW are provided in Table 4.

Cancer risk contribution by each source at the MEIR and MEIW are provided in Table 18 and Table 19, respectively. Cancer risk isopleths are provided as Figure 2 and Figure 3.

5.4.2 Non-Cancer Chronic Health Index

The following table summarizes the potential non-cancer chronic HI at the PMI, MEIR, and MEIW.

Receptor	UTM X (m)	UTM Y (m)	Non-Cancer Chronic HI	Target Organ
PMI	417,335.3	3,754,055	0.12	RESP
MEIR	417,400	3,754,250	0.03	RESP
MEIW	417,350	3,754,100	0.11	RESP

There are no clear risk drivers for chronic HI, but contributing substances include crystalline silica, acrolein, and toluene. The primary target organ for the non-cancer chronic HI is the respiratory system. Non-cancer chronic HI contribution by each substance at the MEIR and MEIW are provided in Table 5 and Table 6, respectively. Non-cancer chronic HI contribution by each source at the MEIR and MEIW are provided in Table 20 and Table 21, respectively. Non-cancer chronic HI isopleths are provided in Figure 4.

The non-cancer 8-hour chronic HI for the PMI is 0.02. Carbonyl sulfide appears to drive the non-cancer 8-hour chronic HI, and the primary target organ is the central nervous system.

5.4.3 Non-Cancer Acute Health Index

The following table summarizes the potential non-cancer acute HI at the PMI, MEIR, and MEIW.

Receptor	UTM X (m)	UTM Y (m)	Non-Cancer Acute HI	Target Organ
PMI	417,335.3	3,754,055	0.06	RESP
MEIR	417,400	3,754,250	0.01	RESP
MEIW	417,350	3,754,100	0.05	RESP

Toluene and Acrolein appear to drive the non-cancer acute HI, and the primary target organ systems is the respiratory system. Toluene and acrolein appear to drive the non-cancer acute HI, and the primary target organ system is the respiratory system. Non-cancer acute HI contribution by source at the PMI, MEIR and MEIW are provided in Table 22, Table 23, and Table 24, respectively. The non-cancer acute HI isopleth are provided as Figure 5.

5.4.4 Population Exposure

Population-wide cancer risk was estimated assuming a 70-year exposure scenario. Shown on Figure 6, the cancer risk of one in one million isopleth extends approximately one mile from the facility boundary. Census tract data for the surrounding data was obtained in order to calculate cancer burden. The average cancer risk for each census tract was determined and multiplied by the population for each respective tract to determine the overall cancer burden, which is approximately 0.072. The results are summarized in the table below, and a census tract map is provided as Figure 7.

Census Tract	Population	Cancer Risk			Cancer Burden
		Max	Min	Average	
06059001507	4,927	1.14E-05	1.00E-06	6.20E-06	0.031
06059001504	4,906	1.03E-05	4.53E-07	5.38E-06	0.026
06059001503	5,748	3.72E-06	2.11E-07	1.97E-06	0.011
06059001506	4,143	1.68E-06	1.32E-07	9.06E-07	0.004
Total:	19,724	--	--	--	0.072

Assuming the entire population within the analyzed census tracts are included, the total population exposed to a cancer risk at or above 1 in one million is estimated to be approximately 19,724 people. Approximately 100 households are within the 10 in one million isopleth. Assuming a household average of 4 persons, the total population exposed to a cancer risk above 10 in one million is estimated to be approximately 400. Population-based exposure is summarized in the tables below.

Cancer Risk

Exposed to Cancer Risk Greater Than...	Residents
100 in one million	0
10 in one million	~400
1 in one million	~19,724

Non-Cancer Health Index

Exposed to Non-Cancer Health Index Greater Than...	Residents
5.0	0
3.0	0
1.0	0
0.5	0

6.0 CONCLUSIONS

The cancer risk is above 10 in one million and below 25 in one million at the facilities located directly west of the Kirkhill Facility. In addition, the cancer risk is above 10 in one million and below 25 in one million at the residential areas near the facility, including Brea Junior High School. Therefore, notification will be required for the facilities and residences that reside within the 10 in one million isopleths. Brea Junior High also lies within these neighborhoods. Therefore, notification will need to be provided for the school as well. Risk Reduction will not be required.

7.0 SIGNATORY

For and on behalf of Alta Environmental:



Chris Waller, CPP
Director of EHS & Air



Yasaman Azar Houshang
EHS Specialist

8.0 REFERENCES

1. California Air Resources Board (CARB), 2018. Hotspots Analysis and Reporting Program (HARP)." June 11. Available online at: <https://www.arb.ca.gov/toxics/harp/harp.htm>.
2. Office of Environmental Health Hazard Assessment (OEHHA), 2015. "Air Toxics Hot Spots Program. Risk Assessment Guidelines. Guidance Manual for Preparation of Risk Assessments." February. Available online at: <https://oehha.ca.gov/air/crn/notice-adoption-air-toxics-hot-spots-program-guidance-manual-preparation-health-risk-0>
3. South Coast Air Quality Management District (SCAQMD), 2015. "Supplemental Guidelines for Preparing Risk Assessments for the Air Toxics "Hot Spots" Information and Assessment Act." June 5. Available online at: http://www.aqmd.gov/docs/default-source/planning/risk-assessment/ab2588_guidelines.pdf?sfvrsn=2.
4. South Coast Air Quality Management District (SCAQMD), 2019. "SCAQMD Modeling Guidance for AERMOD." Available online at: www.aqmd.gov/home/air-quality/air-quality-data-studies/meteorological-data/modeling-guidance#AERMOD.

Tables

Table 10
List of Sources with Toxic Air Contaminant (TAC) Emissions
Kirkhil Inc. Brea, CA

Source Type	Source ID	Release ID	Description	Size	Units
External Combustion	D1	1	Boiler, Natural Gas, With Low NOx burner and flue gas recirculation	17.5	mmBtu/hr
Mixer	D12	100	Mixer, Bolling, Rubber	N/A	N/A
External Combustion	D2	2	Boiler, Natural Gas, With Low NOx burner and flue gas recirculation	18.9	mmBtu/hr
Mill	D20	100	Mill, Black Rubber, Two Roll	N/A	N/A
Mixer	D21	139	Mixer, Banbury Mixer No. 3A, Rubber	N/A	N/A
Mixer	D23	24	Mixer, Banbury Mixer No. 11, Rubber	N/A	N/A
Mill	D25	139	Mill, Roll, Silicon Rubber	N/A	N/A
Extruder	D31	31	Extruder	N/A	N/A
Oven	D32	35	Oven, Curing, Microwave, Cober	18	kW
Oven	D33	35	Oven, Curing, Electric, Infatrol	60	kW
Oven	D37	124	Oven, Curing, Microwave, Monsanto	2.5	kVA
Oven	D38	124	Oven, Curing, Electric, Infatrol	76	kVA
Spray Booth	D50	50	Spray Coating Operations With Spray Booth	N/A	N/A
Oven	D53	129	Oven, Curing, Electric, Dispatch	224	kW
Oven	D54	160	Oven, Curing, Electric, Young Brothers	90	kVA
Oven	D55	160	Oven, Curing, Natural Gas, K.J. Callahan	0.6	mmBtu/hr
Oven	D56	160	Oven, Curing, Electric, Grieve-Hendry	40	kW
Oven	D57	160	Oven, Curing, Natural Gas, No. 7, Millmetco	0.5	mmBtu/hr
Oven	D58	160	Oven, Curing, Natural Gas, No. 8, Callahan	0.6	mmBtu/hr
Oven	D59	160	Oven, Curing, Natural Gas, Immersopak Burner	0.59	mmBtu/hr
Oven	D65	66	Oven, Curing, Electric, Blue M	23.8	kW
Oven	D68	67	Oven, Electric Blue M, Rubber Curing	13.75	kVA
Oven	D70	69	Oven, Curing, Electric, Rubber Curing	28	kW
Press	D71	226	Press, No. 1, Sponge Rubber Curing, Steam Heated	N/A	N/A
Press	D72	226	Press, No. 2, Sponge Rubber Curing, Steam Heated	N/A	N/A
Press	D73	226	Press, No. 77, Sponge Rubber Curing, Steam Heated	N/A	N/A
Press	D74	74	Press, No. 88, Sponge Rubber Curing, Steam Heated	N/A	N/A
Press	D75	226	Press, No. 96, Sponge Rubber, Curing, Steam Heated	N/A	N/A
Press	D76	226	Press, No. 98, Sponge Rubber, Curing, Steam Heated	N/A	N/A
Press	D77	226	Press, No. 106, Sponge Rubber, Curing, Steam Heated	N/A	N/A
Press	D79	226	Press, No. 35, Mechanical Sponge Rubber, Curing, Steam Heated	N/A	N/A
Press	D80	226	Press, No. 36, Mechanical Sponge Rubber, Curing, Steam Heated	N/A	N/A
Press	D83	226	Press, No. 97, Mechanical Sponge Rubber, Curing, Steam Heated	N/A	N/A
Press	D84	226	Press, No. 99, Mechanical Sponge Rubber, Curing, Steam Heated	N/A	N/A
Press	D85	385	Press No. SP11, Mechanical Sponge Rubber Curing, Steam Heated	N/A	N/A
Press	D86	226	Press, No. 109, Mechanical Sponge Rubber, Curing, Steam Heated	N/A	N/A

Table 10
List of Sources with Toxic Air Contaminant (TAC) Emissions
Kirkhil Inc. Brea, CA

Source Type	Source ID	Release ID	Description	Size	Units
Press	D87	385	Press No. SP19, Mechanical Sponge Rubber Curing, Steam Heated	N/A	N/A
Press	D88	385	Press No. SP20, Sponge Rubber Curing, Steam Heated	N/A	N/A
Press	D89	226	Press No. 104, Sponge Rubber Curing, Steam Heated	N/A	N/A
Oven	D95	69	Oven, Curing, Electric	18	kW
Oven	D96	69	Oven, Curing, Electric	11.5	kW
Oven	D97	69	Oven, Curing, Electric	1	kW
Press	D99	99	Press No. SP23, Sponge Rubber Curing, Steam Heated	N/A	N/A
Mixer	D120	120	Mixer 60"	N/A	N/A
Oven	D128	157	Oven, Curing, Despatch, Electric, Model PSC3-24, SN 11109	51	kW
Mill	D138	100	Mill, Black, No. 2, Pacific Model No. 48, Silicone Rubber	50	hp
Mill	D141	139	Mill, Roll, No. 3, Silicone Rubber	5	hp
Oven	D142	67	Oven, Curing, Electric, Model No. E 4006-6	18	kW
Oven	D143	150	Oven, Curing, electric, Model No. E4006-6	18	kW
Oven	D144	150	Oven, Curing, electric, Model No. E4006-6	12	kW
Oven	D145	150	Oven, Curing, electric, Model No. E4004-4	4	kW
Oven	D146	150	Oven, Curing, electric, Model No. E4004-4	8	kW
Mill	D147	139	Mill, Roll, No. 1, Erie, Clean Room, Silicone Rubber	150	hp
Mill	D149	139	Mill, Roll, No. 153, Model No. 3760 BCD, Silicone Rubber	75	hp
Mill	D152	139	Mill, Roll, No. 2, Silicone Rubber	125	hp
Press	D156	226	Press, No. 76, Sponge Rubber Curing, Steam Heated	N/A	N/A
Abrasive Blasting	E106	106	219 Equipment, Abrasive Blasting Equipment, Glove Box w Dust Filter	<53	ft3
Other Use of Organics	E109	109	219 Equipment, printing w related coating, laminating and drying equipment	N/A	N/A
Press	E153	153	219 Equipment, Presses, RAM Dia < 26 in, Temp < 400 deg F (28 devices, Dept 226)	N/A	N/A
Autoclave Curing	N/A	118	Autoclave Curing	N/A	N/A
Calendering	N/A	117	Calendering	N/A	N/A
Cooling Towers	N/A	115	Cooling Towers	N/A	N/A
External Combustion	N/A	110	219 Exempt Equipment Natural Gas Usage	N/A	N/A
External Combustion	N/A	110	219 Exempt Equipment Kerosene Usage	N/A	N/A
External Combustion	N/A	110	219 Exempt Equipment Propane Usage	N/A	N/A
Extruder	N/A	112	Non-Permitted Extruders	N/A	N/A
Internal Combustion	N/A	116	Portable gasoline pressure washer	N/A	N/A
Other Use of Organics	N/A	114	219 Equipment, Miscellaneous materials (adhesives, solvents, etc.) usage	N/A	N/A

Table 10
List of Sources with Toxic Air Contaminant (TAC) Emissions
Kirkhil Inc. Brea, CA

Source Type	Source ID	Release ID	Description	Size	Units
Oven	N/A	113	Unpermitted Ovens (Dept 385, Dept 155, Dept 380-1, Dept 380-2)	N/A	N/A
Rotocuring	N/A	119	Rotocuring	N/A	N/A
Welding	N/A	1092	Welding/Soldering	N/A	N/A

Table 11
Source Modeling Parameters
Kirkhill, Inc. Brea, CA

Release ID	Release Description	Source IDs	Source Description	UTM X (m)	UTM Y (m)	Elevation (ft)	Stack Height (ft)	Stack Temp (F)	Stack Velocity (ft/min)	Stack Diameter (ft)
1	D1 Superior Boiler	D1	D1 Superior Boiler	417,390	3,754,029	390.16	25	350	929	2
2	D2 Dixon Boiler	D2	D2 Dixon Boiler	417,394	3,754,023	389.44	25	350	1,004	2
24	D23 Mixer	D23	C24 Baghouse, D23 Mixer	417,459	3,753,911	366.04	18	300	1,415	1.5
35	C35 Smog Hog	D32, D33	D32 Oven, D33 Oven	417,418	3,753,980	381.82	25	200	764	0.5
50	D50 Spray Booth	D50	D50 SprayBooth	417,332	3,754,020	385.30	25	73.4	127	1
66	C66 ESP Smog Hog	D65	D65 Oven	417,339	3,754,020	385.79	22	100	3,395	0.75
67	C67 ESP Smog Hog	D68, D1422	D68 Oven, D1422 Oven	417,337	3,754,038	386.42	22	100	3,395	0.75
69	C69 ESP Smog Hog	D70, D95, D96, D97	Ovens D70, D95, D96, D97	417,389	3,754,057	391.96	25	100	3,395	0.75
100	C100 Baghouse	D12, D20, D138	D12 Mixer, D20 Mill, D138 Mill	417,468	3,753,882	363.02	25	250	1,981	1.5
124	C24 SmogHog	D37, D38	D37 Oven, D38 Oven	417,421	3,753,955	377.26	22	200	5,602	1
129	C129 Smog Hog	D53	D53 Oven	417,418	3,753,966	379.76	22	100	3,395	0.75
139	C139 Baghouse	D21, D25, D141, D147, D149, D152, D154	D21 Mixer, Mills D25, D141, D147, D149, D152, D154	417,457	3,754,019	374.48	25	250	2,829	1.5
150	C150 Smog Hog	D142, D143, D144, D145, D146	Ovens D142, D143, D144, D145, D146	417,383	3,754,099	391.08	22	100	3,395	0.75
157	C157, C158, C159 Scrubber/HEPA,	D128	D128 Oven	417,460	3,754,073	384.28	25	150	3,820	1
160	C160, C161, C162 Scrubber/HEPA,	D54, D55, D56, D57, D58, D59, D591	Ovens D54, D55, D56, D57, D58, D59, D591	417,464	3,754,066	381.10	25	150	3,395	1.5
115	Cooling Towers	D115	D115 Cooling Towers	417,456	3,753,853	362.73	15	73.4	531	6

Release ID	Release Description	Source IDs	Description	UTM X (m)	UTM Y (m)	Elevation (ft)	Release Height (ft)	X Length (ft)	Y Length (ft)	Angle	Initial Vertical Dimension (ft)
106	Rule 219 Blasting	D106	R219 Abrasive Blasting	417,400	3,754,061	392.78	3	25	25	0	0
109	Rule 219 Printing	D109	R219 Printing	417,400	3,754,061	392.78	3	25	25	0	0
110	Rule 219 Combustion	D110	R219 Natrual Gas, Propane, and Kerosene Equipment	417,400	3,754,061	392.78	3	25	25	0	0
114	Misc. Materials Usage	D114	R219 Misc. Materials Usage	417,400	3,754,061	392.78	3	20	20	0	0
153	Rule 219 Presses	D153	R219 Presses	417,400	3,754,061	392.78	3	15	10	0	0

Release ID	Release Description	Source IDs	Description	UTM X (m)	UTM Y (m)	Elevation (ft)	Release Height (ft)	Initial Lateral Dimension (ft)	Initial Vertical Dimension (ft)
31	D31 Extruder	D31	D31 Extruder	417,369	3,754,005	386.55	7	2.3	7
74	D74 Press	D74	D74 Press 88	417,348	3,754,044	387.83	7	2.3	7
99	Dept 384 Press	D99	D99 Press SP23	417,431	3,754,052	389.01	7	10	7
112	Non-Permitted Extruders	D112	Non-Permitted Extruders	417,372	3,754,090	390.49	10	20	7
113	Unpermitted Ovens	D113	Unpermitted Ovens	417,418	3,753,899	370.51	10	20	7
116	Rule 219 Equip	D116	Port Gasoline Pressure Washer	417,436	3,754,134	389.27	4	2	2
117	Calendaring	D117	Calendaring	417,434	3,753,964	375.89	10	15	7
118	Autoclaving	D118	Autoclave Curing	417,380	3,754,066	391.63	10	12	7
119	Rotocuring	D119	Rotocuring	417,335	3,754,025	385.70	10	15	7
120	D120 Mixer	D120	D120 Mixer 60	417,444	3,753,880	365.72	7	2.3	7
226	Dept 226 Press	D71, D72, D73, D75, D76, D77, D79, D80, D83, D84, D86, D89, D156	D71 Press 1, D72 Press 2, D73 Press 77, D75 Press 96, D76 Press 98, D77 Press 106, D79 Press 35, D80 Press 36, D83 Press 97, D84 Press 99, D86 Press 109, D89 Press 104, D156 Press 76	417,453	3,754,072	386.22	7	15	7
385	Dept 385 Press	D85, D87, D88	D85 Press SP11, D87 Press SP19, D88 Press SP20	417,412	3,754,072	393.04	7	15	7
1092	Welding/Soldering	D1092	Welding/Soldering	417,433	3,753,953	374.25	7	7	7

Table 12
Annual Emissions By Source and Substance, in Pounds per Year (lbs/yr)
Kirkhill Inc., Brea, CA

Substance Name	Release #:	1	2	24	31	35	50
	CAS	D1 Superior Boiler	D2 Dixon Boiler	D23 Mixer	D31 Extruder	C35 Smog Hog	D50 Spray Booth
SILICA [CRYSTALLINE, RESPIRABLE]	1175			40.652			
Carbon tetrachloride	56235			8.741			
4-Dimethylaminoazobenzene [POM]	60117			0.009			
Aniline	62533			0.113	0.208	0.199	
Methanol	67561						37.752
Benzene	71432	0.210	0.228	0.082	0.112	6.962	0.001
Methylene chloride {Dichloromethane}	75092			1.989	3.822	0.936	
Carbon disulfide	75150			7.553	0.126	279.538	
Propylene oxide	75569			3.874	0.956		
Methyl ethyl ketone {2-Butanone}	78933			0.649	0.100	0.622	1.893
Hexachlorobutadiene	87683				0.150		
Naphthalene [PAH, POM]	91203	0.011	0.012	0.027	0.507	0.849	
Quinoline	91225					47.459	
Biphenyl [POM]	92524			0.009		0.607	
Benzidine (and its salts) [POM]	92875			0.000	0.007		
1,2-Dibromo-3-chloropropane {DBCP}	96128						
Acetophenone	98862			0.125	2.516	29.233	
Methylene diphenyl diisocyanate {MDI} [POM]	101688						
Epichlorohydrin	106898						
1,3-Butadiene	106990			0.098	0.160	0.476	
Acrolein	107028	0.098	0.106	0.287	0.154	1.948	
Acrylonitrile	107131			0.216			
Methyl isobutyl ketone {Hexone}	108101			2.575	2.203		2.181
Toluene	108883	0.958	1.041	1.191	2.314	1.586	0.001
Diethylene glycol	111466						
Chloroprene	126998						
Carbonyl sulfide	463581			2.385			
2-Chloroacetophenone	532274			0.000	0.004		
Manganese	7439965						
Cadmium (Cd) Compounds	7440439			0.001			
Chromium	7440473						
Copper	7440508						
Zinc	7440666						
Ammonia	7664417	115.696	125.708				
Chromium, hexavalent (and compounds)	18540299						
Dipropylene glycol monomethyl ether	34590948						

Table 12
Annual Emissions By Source and Substance, in Pounds per Year (lbs/yr)
Kirkhill Inc., Brea, CA

Substance Name	Release #:	66	67	69	74	99	100
	CAS	C66 ESP Smog Hog	C67 ESP Smog Hog	C69 ESP Smog Hog	D74 Press	Dept 384 Press	C100 Baghouse
SILICA [CRYSTALLINE, RESPIRABLE]	1175						98.854
Carbon tetrachloride	56235						21.257
4-Dimethylaminoazobenzene [POM]	60117						
Aniline	62533	0.099	0.005	0.010	30.979	2.269	
Methanol	67561						
Benzene	71432	3.481	0.178	0.356	0.355	0.026	
Methylene chloride {Dichloromethane}	75092	0.468	0.024	0.048	0.367	0.027	
Carbon disulfide	75150	139.769	7.154	14.309	67.598	4.951	
Propylene oxide	75569				14.815	1.085	
Methyl ethyl ketone {2-Butanone}	78933	0.311	0.016	0.032	0.655	0.048	
Hexachlorobutadiene	87683				0.083	0.006	
Naphthalene [PAH, POM]	91203	0.425	0.022	0.043	0.227	0.017	
Quinoline	91225	23.729	1.215	2.429			
Biphenyl [POM]	92524	0.303	0.016	0.031	0.047	0.003	
Benzidine (and its salts) [POM]	92875				0.000	0.000	
1,2-Dibromo-3-chloropropane {DBCP}	96128						
Acetophenone	98862	14.616	0.748	1.496	6.408	0.469	
Methylene diphenyl diisocyanate {MDI} [POM]	101688						
Epichlorohydrin	106898						
1,3-Butadiene	106990	0.238	0.012	0.024	2.499	0.183	
Acrolein	107028	0.974	0.050	0.100			
Acrylonitrile	107131				0.150	0.011	0.441
Methyl isobutyl ketone {Hexone}	108101				24.615	1.803	6.593
Toluene	108883	0.793	0.041	0.081	1.493	0.109	
Diethylene glycol	111466						
Chloroprene	126998				1.383	0.101	
Carbonyl sulfide	463581				8.060	0.590	5.905
2-Chloroacetophenone	532274						
Manganese	7439965						
Cadmium (Cd) Compounds	7440439						0.003
Chromium	7440473						
Copper	7440508						
Zinc	7440666						
Ammonia	7664417						
Chromium, hexavalent (and compounds)	18540299						
Dipropylene glycol monomethyl ether	34590948						

Table 12
Annual Emissions By Source and Substance, in Pounds per Year (lbs/yr)
Kirkhill Inc., Brea, CA

Substance Name	Release #:	106	109	110	112	113	114	115
	CAS	Rule 219 Blasting	Rule 219 Printing	Rule 219 Combustion	Non-Permitted Extruders	Unpermitted Ovens	Misc. Materials Usage	Cooling Towers
SILICA [CRYSTALLINE, RESPIRABLE]	1175	0.123						
Carbon tetrachloride	56235							
4-Dimethylaminoazobenzene [POM]	60117							
Aniline	62533				0.163	0.112		
Methanol	67561						1548.099	
Benzene	71432			0.017	0.088	3.916		
Methylene chloride {Dichloromethane}	75092				2.997	0.527		
Carbon disulfide	75150				0.099	157.256		
Propylene oxide	75569				0.750			
Methyl ethyl ketone {2-Butanone}	78933		585.338		0.078	0.350	1529.712	
Hexachlorobutadiene	87683				0.118			
Naphthalene [PAH, POM]	91203			0.001	0.398	0.478		
Quinoline	91225					26.698		
Biphenyl [POM]	92524					0.341		
Benzidine (and its salts) [POM]	92875				0.006			
1,2-Dibromo-3-chloropropane {DBCP}	96128							
Acetophenone	98862				1.973	16.445		
Methylene diphenyl diisocyanate {MDI} [POM]	101688						0.157	
Epichlorohydrin	106898							
1,3-Butadiene	106990				0.125	0.268		
Acrolein	107028			0.006	0.121	1.096		
Acrylonitrile	107131							
Methyl isobutyl ketone {Hexone}	108101		0.211		1.728		9.213	
Toluene	108883			0.079	1.815	0.892	8259.706	
Diethylene glycol	111466		0.275				280.000	
Chloroprene	126998							
Carbonyl sulfide	463581							
2-Chloroacetophenone	532274				0.003			
Manganese	7439965							
Cadmium (Cd) Compounds	7440439							
Chromium	7440473				0.068			
Copper	7440508							
Zinc	7440666							
Ammonia	7664417			6.952				
Chromium, hexavalent (and compounds)	18540299				0.034			
Dipropylene glycol monomethyl ether	34590948		1.339				1416.666	

Table 13
Annual Emissions By Source and Substance, in Pounds per Hour (lbs/hr)
Kirkhill Inc., Brea, CA

Substance Name	Release #:	1	2	24	31	35	50
	CAS	D1 Superior Boiler	D2 Dixon Boiler	D23 Mixer	D31 Extruder	C35 Smog Hog	D50 Spray Booth
SILICA [CRYSTALLINE, RESPIRABLE]	1175			4.64E-03			
Carbon tetrachloride	56235			9.97E-04			
4-Dimethylaminoazobenzene [POM]	60117			1.04E-06			
Aniline	62533			1.28E-05	2.37E-05	2.27E-05	
Methanol	67561						4.31E-03
Benzene	71432	2.39E-05	2.60E-05	9.35E-06	1.28E-05	7.94E-04	1.37E-07
Methylene chloride {Dichloromethane}	75092			2.27E-04	4.36E-04	1.07E-04	0.00E+00
Carbon disulfide	75150			8.61E-04	1.44E-05	3.19E-02	
Propylene oxide	75569			4.42E-04	1.09E-04		
Methyl ethyl ketone {2-Butanone}	78933			7.41E-05	1.14E-05	7.10E-05	2.16E-04
Hexachlorobutadiene	87683				1.71E-05		
Naphthalene [PAH, POM]	91203	1.24E-06	1.34E-06	3.13E-06	5.79E-05	9.69E-05	
Quinoline	91225					5.41E-03	
Biphenyl [POM]	92524			1.07E-06		6.92E-05	
Benzidine (and its salts) [POM]	92875			3.98E-09	8.51E-07		
1,2-Dibromo-3-chloropropane {DBCP}	96128						
Acetophenone	98862			1.42E-05	2.87E-04	3.33E-03	
Methylene diphenyl diisocyanate {MDI} [POM]	101688						
Epichlorohydrin	106898						
1,3-Butadiene	106990			1.11E-05	1.82E-05	5.43E-05	0.00E+00
Acrolein	107028	1.11E-05	1.21E-05	3.27E-05	1.76E-05	2.22E-04	
Acrylonitrile	107131			2.47E-05			
Methyl isobutyl ketone {Hexone}	108101			2.94E-04	2.51E-04		2.49E-04
Toluene	108883	1.09E-04	1.19E-04	1.36E-04	2.64E-04	1.81E-04	1.37E-07
Diethylene glycol	111466						
Chloroprene	126998						
Carbonyl sulfide	463581			2.72E-04			
2-Chloroacetophenone	532274			3.46E-08	4.31E-07		
Manganese	7439965						
Cadmium (Cd) Compounds	7440439			1.58E-07			
Chromium	7440473						
Copper	7440508						
Zinc	7440666						
Ammonia	7664417	1.32E-02	1.43E-02				
Chromium, hexavalent (and compounds)	18540299						
Dipropylene glycol monomethyl ether	34590948						

Table 13
Annual Emissions By Source and Substance, in Pounds per Hour (lbs/hr)
Kirkhill Inc., Brea, CA

Substance Name	Release #:	66	67	69	74	99	100
	CAS	C66 ESP Smog Hog	C67 ESP Smog Hog	C69 ESP Smog Hog	D74 Press	Dept 384 Press	C100 Baghouse
SILICA [CRYSTALLINE, RESPIRABLE]	1175						1.13E-02
Carbon tetrachloride	56235						2.42E-03
4-Dimethylaminoazobenzene [POM]	60117						
Aniline	62533	1.13E-05	5.80E-07	1.16E-06	3.53E-03	2.59E-04	
Methanol	67561						
Benzene	71432	3.97E-04	2.03E-05	4.06E-05	4.05E-05	2.97E-06	
Methylene chloride {Dichloromethane}	75092	5.34E-05	2.73E-06	5.46E-06	4.18E-05	3.06E-06	
Carbon disulfide	75150	1.59E-02	8.16E-04	1.63E-03	7.71E-03	5.65E-04	
Propylene oxide	75569				1.69E-03	1.24E-04	
Methyl ethyl ketone {2-Butanone}	78933	3.55E-05	1.82E-06	3.63E-06	7.47E-05	5.47E-06	
Hexachlorobutadiene	87683				9.47E-06	6.94E-07	
Naphthalene [PAH, POM]	91203	4.84E-05	2.48E-06	4.96E-06	2.59E-05	1.90E-06	
Quinoline	91225	2.71E-03	1.39E-04	2.77E-04			
Biphenyl [POM]	92524	3.46E-05	1.77E-06	3.54E-06	5.38E-06	3.94E-07	
Benzidine (and its salts) [POM]	92875				0.00E+00	0.00E+00	
1,2-Dibromo-3-chloropropane {DBCP}	96128						
Acetophenone	98862	1.67E-03	8.53E-05	1.71E-04	7.31E-04	5.35E-05	
Methylene diphenyl diisocyanate {MDI} [POM]	101688						
Epichlorohydrin	106898						
1,3-Butadiene	106990	2.71E-05	1.39E-06	2.78E-06	2.85E-04	2.09E-05	
Acrolein	107028	1.11E-04	5.69E-06	1.14E-05			
Acrylonitrile	107131				1.71E-05	1.25E-06	5.03E-05
Methyl isobutyl ketone {Hexone}	108101				2.81E-03	2.06E-04	7.52E-04
Toluene	108883	9.04E-05	4.63E-06	9.26E-06	1.70E-04	1.25E-05	
Diethylene glycol	111466						
Chloroprene	126998				1.58E-04	1.16E-05	
Carbonyl sulfide	463581				9.19E-04	6.73E-05	6.73E-04
2-Chloroacetophenone	532274						
Manganese	7439965						
Cadmium (Cd) Compounds	7440439						3.84E-07
Chromium	7440473						
Copper	7440508						
Zinc	7440666						
Ammonia	7664417						
Chromium, hexavalent (and compounds)	18540299						
Dipropylene glycol monomethyl ether	34590948						

Table 13
Annual Emissions By Source and Substance, in Pounds per Hour (lbs/hr)
Kirkhill Inc., Brea, CA

Substance Name	Release #:	106	109	110	112	113	114	115
	CAS	Rule 219 Blasting	Rule 219 Printing	Rule 219 Combustion	Non-Permitted Extruders	Unpermitted Ovens	Misc. Materials Usage	Cooling Towers
SILICA [CRYSTALLINE, RESPIRABLE]	1175	1.40E-05						
Carbon tetrachloride	56235							
4-Dimethylaminoazobenzene [POM]	60117							
Aniline	62533				1.86E-05	1.27E-05		
Methanol	67561						1.77E-01	
Benzene	71432			1.98E-06	1.01E-05	4.47E-04		
Methylene chloride {Dichloromethane}	75092				3.42E-04	6.00E-05		
Carbon disulfide	75150				1.13E-05	1.79E-02		
Propylene oxide	75569				8.55E-05			
Methyl ethyl ketone {2-Butanone}	78933		6.68E-02		8.94E-06	3.99E-05	1.74E-01	
Hexachlorobutadiene	87683				1.34E-05			
Naphthalene [PAH, POM]	91203			7.44E-08	4.54E-05	5.45E-05		
Quinoline	91225					3.04E-03		
Biphenyl [POM]	92524					3.89E-05		
Benzidine (and its salts) [POM]	92875				6.67E-07			
1,2-Dibromo-3-chloropropane {DBCP}	96128							
Acetophenone	98862				2.25E-04	1.88E-03		
Methylene diphenyl diisocyanate {MDI} [POM]	101688						1.79E-05	
Epichlorohydrin	106898							
1,3-Butadiene	106990				1.43E-05	3.05E-05		
Acrolein	107028			6.69E-07	1.38E-05	1.25E-04		
Acrylonitrile	107131							
Methyl isobutyl ketone {Hexone}	108101		2.40E-05		1.97E-04		1.05E-03	
Toluene	108883			9.06E-06	2.07E-04	1.02E-04	9.42E-01	
Diethylene glycol	111466		3.14E-05				3.19E-02	
Chloroprene	126998							
Carbonyl sulfide	463581							
2-Chloroacetophenone	532274				3.38E-07			
Manganese	7439965							
Cadmium (Cd) Compounds	7440439							
Chromium	7440473				7.78E-06			
Copper	7440508							
Zinc	7440666							
Ammonia	7664417			7.93E-04				
Chromium, hexavalent (and compounds)	18540299				3.89E-06			
Dipropylene glycol monomethyl ether	34590948		1.53E-04				1.62E-01	

Table 14
Annual Emissions By Source and Substance, in Grams per Second (g/s)
Kirkhill Inc., Brea, CA

Substance Name	Release #:	1	2	24	31	35	50
	CAS	D1 Superior Boiler	D2 Dixon Boiler	D23 Mixer	D31 Extruder	C35 Smog Hog	D50 Spray Booth
SILICA [CRYSTALLINE, RESPIRABLE]	1175			5.84E-04			
Carbon tetrachloride	56235			1.26E-04			
4-Dimethylaminoazobenzene [POM]	60117			1.31E-07			
Aniline	62533			1.62E-06	2.99E-06	2.86E-06	0.00E+00
Methanol	67561						5.42E-04
Benzene	71432	3.01E-06	3.27E-06	1.18E-06	1.62E-06	1.00E-04	1.72E-08
Methylene chloride {Dichloromethane}	75092			2.86E-05	5.49E-05	1.34E-05	
Carbon disulfide	75150			1.09E-04	1.82E-06	4.02E-03	
Propylene oxide	75569			5.57E-05	1.37E-05		
Methyl ethyl ketone {2-Butanone}	78933			9.33E-06	1.44E-06	8.94E-06	2.72E-05
Hexachlorobutadiene	87683				2.16E-06		
Naphthalene [PAH, POM]	91203	1.56E-07	1.69E-07	3.94E-07	7.29E-06	1.22E-05	
Quinoline	91225					6.82E-04	
Biphenyl [POM]	92524			1.35E-07		8.72E-06	
Benzidine (and its salts) [POM]	92875			5.01E-10	1.07E-07		
1,2-Dibromo-3-chloropropane {DBCP}	96128						
Acetophenone	98862			1.79E-06	3.62E-05	4.20E-04	
Methylene diphenyl diisocyanate {MDI} [POM]	101688						
Epichlorohydrin	106898						
1,3-Butadiene	106990			1.40E-06	2.30E-06	6.84E-06	
Acrolein	107028	1.40E-06	1.52E-06	4.12E-06	2.22E-06	2.80E-05	
Acrylonitrile	107131			3.11E-06			
Methyl isobutyl ketone {Hexone}	108101			3.70E-05	3.17E-05		3.13E-05
Toluene	108883	1.38E-05	1.50E-05	1.71E-05	3.33E-05	2.28E-05	1.72E-08
Diethylene glycol	111466						
Chloroprene	126998						
Carbonyl sulfide	463581			3.43E-05			
2-Chloroacetophenone	532274			4.36E-09	5.43E-08		
Manganese	7439965						
Cadmium (Cd) Compounds	7440439			1.99E-08			
Chromium	7440473						
Copper	7440508						
Zinc	7440666						
Ammonia	7664417	1.66E-03	1.81E-03				
Chromium, hexavalent (and compounds)	18540299						
Dipropylene glycol monomethyl ether	34590948						

Table 14
Annual Emissions By Source and Substance, in Grams per Second (g/s)
Kirkhill Inc., Brea, CA

Substance Name	Release #:	66	67	69	74	99	100
	CAS	C66 ESP Smog Hog	C67 ESP Smog Hog	C69 ESP Smog Hog	D74 Press	Dept 384 Press	C100 Baghouse
SILICA [CRYSTALLINE, RESPIRABLE]	1175						1.42E-03
Carbon tetrachloride	56235						3.05E-04
4-Dimethylaminoazobenzene [POM]	60117						
Aniline	62533	1.43E-06	7.31E-08	1.46E-07	4.45E-04	3.26E-05	
Methanol	67561						
Benzene	71432	5.00E-05	2.56E-06	5.12E-06	5.10E-06	3.74E-07	
Methylene chloride {Dichloromethane}	75092	6.72E-06	3.44E-07	6.88E-07	5.27E-06	3.86E-07	
Carbon disulfide	75150	2.01E-03	1.03E-04	2.06E-04	9.71E-04	7.11E-05	
Propylene oxide	75569				2.13E-04	1.56E-05	
Methyl ethyl ketone {2-Butanone}	78933	4.47E-06	2.29E-07	4.58E-07	9.41E-06	6.89E-07	
Hexachlorobutadiene	87683				1.19E-06	8.74E-08	
Naphthalene [PAH, POM]	91203	6.10E-06	3.12E-07	6.25E-07	3.26E-06	2.39E-07	
Quinoline	91225	3.41E-04	1.75E-05	3.49E-05			
Biphenyl [POM]	92524	4.36E-06	2.23E-07	4.46E-07	6.77E-07	4.96E-08	
Benzidine (and its salts) [POM]	92875				0.00E+00	0.00E+00	
1,2-Dibromo-3-chloropropane {DBCP}	96128						
Acetophenone	98862	2.10E-04	1.08E-05	2.15E-05	9.21E-05	6.74E-06	
Methylene diphenyl diisocyanate {MDI} [POM]	101688						
Epichlorohydrin	106898						
1,3-Butadiene	106990	3.42E-06	1.75E-07	3.50E-07	3.59E-05	2.63E-06	
Acrolein	107028	1.40E-05	7.17E-07	1.43E-06			
Acrylonitrile	107131				2.15E-06	1.58E-07	6.34E-06
Methyl isobutyl ketone {Hexone}	108101				3.54E-04	2.59E-05	9.47E-05
Toluene	108883	1.14E-05	5.83E-07	1.17E-06	2.15E-05	1.57E-06	
Diethylene glycol	111466						
Chloroprene	126998				1.99E-05	1.46E-06	
Carbonyl sulfide	463581				1.16E-04	8.48E-06	8.49E-05
2-Chloroacetophenone	532274						
Manganese	7439965						
Cadmium (Cd) Compounds	7440439						4.84E-08
Chromium	7440473						
Copper	7440508						
Zinc	7440666						
Ammonia	7664417						
Chromium, hexavalent (and compounds)	18540299						
Dipropylene glycol monomethyl ether	34590948						

Table 14
Annual Emissions By Source and Substance, in Grams per Second (g/s)
Kirkhill Inc., Brea, CA

Substance Name	Release #:	106	109	110	112	113	114	115
	CAS	Rule 219 Blasting	Rule 219 Printing	Rule 219 Combustion	Non-Permitted Extruders	Unpermitted Ovens	Misc. Materials Usage	Cooling Towers
SILICA [CRYSTALLINE, RESPIRABLE]	1175	1.77E-06						
Carbon tetrachloride	56235							
4-Dimethylaminoazobenzene [POM]	60117							
Aniline	62533				2.35E-06	1.61E-06		
Methanol	67561						2.22E-02	
Benzene	71432			2.50E-07	1.27E-06	5.63E-05		
Methylene chloride {Dichloromethane}	75092				4.31E-05	7.57E-06		
Carbon disulfide	75150				1.42E-06	2.26E-03		
Propylene oxide	75569				1.08E-05			
Methyl ethyl ketone {2-Butanone}	78933		8.41E-03		1.13E-06	5.03E-06	2.20E-02	
Hexachlorobutadiene	87683				1.69E-06			
Naphthalene [PAH, POM]	91203			9.37E-09	5.72E-06	6.87E-06		
Quinoline	91225					3.84E-04		
Biphenyl [POM]	92524					4.90E-06		
Benzidine (and its salts) [POM]	92875				8.41E-08			
1,2-Dibromo-3-chloropropane {DBCP}	96128							
Acetophenone	98862				2.83E-05	2.36E-04		
Methylene diphenyl diisocyanate {MDI} [POM]	101688						2.25E-06	
Epichlorohydrin	106898							
1,3-Butadiene	106990				1.80E-06	3.85E-06		
Acrolein	107028			8.42E-08	1.74E-06	1.58E-05		
Acrylonitrile	107131							
Methyl isobutyl ketone {Hexone}	108101		3.03E-06		2.48E-05		1.32E-04	
Toluene	108883			1.14E-06	2.61E-05	1.28E-05	1.19E-01	
Diethylene glycol	111466		3.95E-06				4.02E-03	
Chloroprene	126998							
Carbonyl sulfide	463581							
2-Chloroacetophenone	532274				4.25E-08			
Manganese	7439965							
Cadmium (Cd) Compounds	7440439							
Chromium	7440473				9.81E-07			
Copper	7440508							
Zinc	7440666							
Ammonia	7664417			9.99E-05				
Chromium, hexavalent (and compounds)	18540299				4.90E-07			
Dipropylene glycol monomethyl ether	34590948		1.92E-05				2.04E-02	

Table 15
List and Locations of Receptors
Kirkhill Inc., Brea, CA

HARP Rec ID	UTM X (m)	UTM Y (m)
1	416,000	3,753,000
2	416,250	3,753,000
3	416,500	3,753,000
4	416,750	3,753,000
5	417,000	3,753,000
6	417,250	3,753,000
7	417,500	3,753,000
8	417,750	3,753,000
9	418,000	3,753,000
10	418,250	3,753,000
11	418,500	3,753,000
12	418,750	3,753,000
13	419,000	3,753,000
14	416,000	3,753,250
15	416,250	3,753,250
16	416,500	3,753,250
17	416,750	3,753,250
18	417,000	3,753,250
19	417,250	3,753,250
20	417,500	3,753,250
21	417,750	3,753,250
22	418,000	3,753,250
23	418,250	3,753,250
24	418,500	3,753,250
25	418,750	3,753,250
26	419,000	3,753,250
27	416,000	3,753,500
28	416,250	3,753,500
29	416,500	3,753,500
30	416,750	3,753,500
31	417,000	3,753,500
32	417,250	3,753,500
33	417,500	3,753,500
34	417,750	3,753,500
35	418,000	3,753,500
36	418,250	3,753,500
37	418,500	3,753,500
38	418,750	3,753,500
39	419,000	3,753,500
40	416,000	3,753,750
41	416,250	3,753,750

Table 15
List and Locations of Receptors
Kirkhill Inc., Brea, CA

HARP Rec ID	UTM X (m)	UTM Y (m)
42	416,500	3,753,750
43	416,750	3,753,750
44	418,000	3,753,750
45	418,250	3,753,750
46	418,500	3,753,750
47	418,750	3,753,750
48	419,000	3,753,750
49	416,000	3,754,000
50	416,250	3,754,000
51	416,500	3,754,000
52	416,750	3,754,000
53	418,000	3,754,000
54	418,250	3,754,000
55	418,500	3,754,000
56	418,750	3,754,000
57	419,000	3,754,000
58	416,000	3,754,250
59	416,250	3,754,250
60	416,500	3,754,250
61	416,750	3,754,250
62	418,000	3,754,250
63	418,250	3,754,250
64	418,500	3,754,250
65	418,750	3,754,250
66	419,000	3,754,250
67	416,000	3,754,500
68	416,250	3,754,500
69	416,500	3,754,500
70	416,750	3,754,500
71	417,000	3,754,500
72	417,250	3,754,500
73	417,500	3,754,500
74	417,750	3,754,500
75	418,000	3,754,500
76	418,250	3,754,500
77	418,500	3,754,500
78	418,750	3,754,500
79	419,000	3,754,500
80	416,000	3,754,750
81	416,250	3,754,750
82	416,500	3,754,750

Table 15
List and Locations of Receptors
Kirkhill Inc., Brea, CA

HARP Rec ID	UTM X (m)	UTM Y (m)
83	416,750	3,754,750
84	417,000	3,754,750
85	417,250	3,754,750
86	417,500	3,754,750
87	417,750	3,754,750
88	418,000	3,754,750
89	418,250	3,754,750
90	418,500	3,754,750
91	418,750	3,754,750
92	419,000	3,754,750
93	416,000	3,755,000
94	416,250	3,755,000
95	416,500	3,755,000
96	416,750	3,755,000
97	417,000	3,755,000
98	417,250	3,755,000
99	417,500	3,755,000
100	417,750	3,755,000
101	418,000	3,755,000
102	418,250	3,755,000
103	418,500	3,755,000
104	418,750	3,755,000
105	419,000	3,755,000
106	416,000	3,755,250
107	416,250	3,755,250
108	416,500	3,755,250
109	416,750	3,755,250
110	417,000	3,755,250
111	417,250	3,755,250
112	417,500	3,755,250
113	417,750	3,755,250
114	418,000	3,755,250
115	418,250	3,755,250
116	418,500	3,755,250
117	418,750	3,755,250
118	419,000	3,755,250
119	417,100	3,753,700
120	417,150	3,753,700
121	417,200	3,753,700
122	417,250	3,753,700
123	417,300	3,753,700

Table 15
List and Locations of Receptors
Kirkhill Inc., Brea, CA

HARP Rec ID	UTM X (m)	UTM Y (m)
124	417,350	3,753,700
125	417,400	3,753,700
126	417,450	3,753,700
127	417,500	3,753,700
128	417,550	3,753,700
129	417,600	3,753,700
130	417,650	3,753,700
131	417,000	3,753,750
132	417,100	3,753,750
133	417,150	3,753,750
134	417,200	3,753,750
135	417,250	3,753,750
136	417,300	3,753,750
137	417,350	3,753,750
138	417,400	3,753,750
139	417,450	3,753,750
140	417,500	3,753,750
141	417,550	3,753,750
142	417,600	3,753,750
143	417,650	3,753,750
144	417,750	3,753,750
145	417,100	3,753,800
146	417,150	3,753,800
147	417,200	3,753,800
148	417,250	3,753,800
149	417,300	3,753,800
150	417,350	3,753,800
151	417,400	3,753,800
152	417,450	3,753,800
153	417,500	3,753,800
154	417,550	3,753,800
155	417,600	3,753,800
156	417,650	3,753,800
157	417,100	3,753,850
158	417,150	3,753,850
159	417,200	3,753,850
160	417,550	3,753,850
161	417,600	3,753,850
162	417,650	3,753,850
163	417,100	3,753,900
164	417,150	3,753,900

Table 15
List and Locations of Receptors
Kirkhill Inc., Brea, CA

HARP Rec ID	UTM X (m)	UTM Y (m)
165	417,200	3,753,900
166	417,250	3,753,900
167	417,550	3,753,900
168	417,600	3,753,900
169	417,650	3,753,900
170	417,100	3,753,950
171	417,150	3,753,950
172	417,200	3,753,950
173	417,250	3,753,950
174	417,550	3,753,950
175	417,600	3,753,950
176	417,650	3,753,950
177	417,000	3,754,000
178	417,100	3,754,000
179	417,150	3,754,000
180	417,200	3,754,000
181	417,250	3,754,000
182	417,300	3,754,000
183	417,550	3,754,000
184	417,600	3,754,000
185	417,650	3,754,000
186	417,750	3,754,000
187	417,100	3,754,050
188	417,150	3,754,050
189	417,200	3,754,050
190	417,250	3,754,050
191	417,300	3,754,050
192	417,550	3,754,050
193	417,600	3,754,050
194	417,650	3,754,050
195	417,100	3,754,100
196	417,150	3,754,100
197	417,200	3,754,100
198	417,250	3,754,100
199	417,300	3,754,100
200	417,350	3,754,100
201	417,550	3,754,100
202	417,600	3,754,100
203	417,650	3,754,100
204	417,100	3,754,150
205	417,150	3,754,150

Table 15
List and Locations of Receptors
Kirkhill Inc., Brea, CA

HARP Rec ID	UTM X (m)	UTM Y (m)
206	417,200	3,754,150
207	417,250	3,754,150
208	417,300	3,754,150
209	417,350	3,754,150
210	417,500	3,754,150
211	417,550	3,754,150
212	417,600	3,754,150
213	417,650	3,754,150
214	417,100	3,754,200
215	417,150	3,754,200
216	417,200	3,754,200
217	417,250	3,754,200
218	417,300	3,754,200
219	417,350	3,754,200
220	417,400	3,754,200
221	417,450	3,754,200
222	417,500	3,754,200
223	417,550	3,754,200
224	417,600	3,754,200
225	417,650	3,754,200
226	417,000	3,754,250
227	417,100	3,754,250
228	417,150	3,754,250
229	417,200	3,754,250
230	417,250	3,754,250
231	417,300	3,754,250
232	417,350	3,754,250
233	417,400	3,754,250
234	417,450	3,754,250
235	417,500	3,754,250
236	417,550	3,754,250
237	417,600	3,754,250
238	417,650	3,754,250
239	417,750	3,754,250
240	417,100	3,754,300
241	417,150	3,754,300
242	417,200	3,754,300
243	417,250	3,754,300
244	417,300	3,754,300
245	417,350	3,754,300
246	417,400	3,754,300

Table 15
List and Locations of Receptors
Kirkhill Inc., Brea, CA

HARP Rec ID	UTM X (m)	UTM Y (m)
247	417,450	3,754,300
248	417,500	3,754,300
249	417,550	3,754,300
250	417,600	3,754,300
251	417,650	3,754,300
252	415,500	3,754,000
253	415,500	3,755,750
254	417,500	3,755,750
255	419,500	3,755,750
256	419,500	3,754,000
257	419,500	3,752,500
258	417,500	3,752,500
259	415,500	3,752,500

Table 16
Period Average Concentration ($\mu\text{g}/\text{m}^3$) at PMI, MEIR, MEIW
Kirkhill Inc., Brea, CA

CAS	Substance Name	PMI	MEIR	MEIW
1175	SILICA [CRYSTALLINE, RESPIRABLE]	2.03E-02	1.52E-02	1.99E-02
56235	Carbon tetrachloride	5.20E-03	3.33E-03	5.01E-03
60117	4-Dimethylaminoazobenzene [POM]	8.78E-07	7.30E-07	8.61E-07
62533	Aniline	2.29E-01	4.96E-02	2.19E-01
67561	Methanol	3.46E+00	7.80E-01	3.14E+00
71432	Benzene	4.21E-02	7.15E-03	3.80E-02
75092	Methylene chloride {Dichloromethane}	1.37E-01	1.05E-02	1.12E-01
75150	Carbon disulfide	3.61E+00	5.04E-01	3.24E+00
75569	Propylene Oxide	1.18E-01	2.42E-02	1.10E-01
78933	Methyl ethyl ketone {2-Butanone}	4.67E+00	1.05E+00	4.23E+00
87683	Hexachlorobutadiene	3.38E-03	2.83E-04	2.68E-03
91203	Naphthalene [PAH, POM]	1.09E-02	1.26E-03	8.75E-03
91225	Quinoline	9.17E-02	4.03E-02	9.26E-02
92524	Biphenyl [POM]	1.47E-03	4.46E-04	1.42E-03
92875	Benzidine (and its salts) [POM]	1.09E-04	4.98E-06	7.91E-05
96128	1,2-Dibromo-3-chloropropane {DBCP}	2.95E-05	4.38E-06	3.07E-05
98862	Acetophenone	3.11E-01	4.47E-02	2.75E-01
101688	Methylene diphenyl diisocyanate {MDI} [POM]	3.47E-04	7.77E-05	3.13E-04
106898	Epichlorohydrin	6.72E-03	5.83E-04	5.87E-03
106990	1,3-Butadiene	2.39E-02	4.71E-03	2.22E-02
107028	Acrolein	1.18E-02	1.87E-03	1.03E-02
107131	Acrylonitrile	7.19E-03	2.58E-03	6.63E-03
108101	Methyl isobutyl ketone {Hexone}	2.78E-01	5.11E-02	2.55E-01
108883	Toluene	1.83E+01	4.10E+00	1.66E+01
111466	Diethylene glycol	6.19E-01	1.39E-01	5.60E-01
126998	Chloroprene	4.17E-02	4.94E-03	3.72E-02
463581	Carbonyl Sulfide	8.12E-02	1.57E-02	7.60E-02
532274	2-Chloroacetophenone	2.52E-03	2.17E-04	2.20E-03
7439965	Manganese	1.81E-04	7.03E-05	1.76E-04
7440439	Cadmium (Cd) Compounds	6.83E-07	5.15E-07	6.71E-07
7440473	Chromium	1.16E-03	3.62E-05	8.17E-04
7440508	Copper	4.31E-04	1.68E-04	4.19E-04
7440666	Zinc	7.29E-04	2.84E-04	7.09E-04
7664382	Phosphoric Acid	0.00E+00	0.00E+00	0.00E+00
7664417	Ammonia	1.96E-01	4.96E-02	1.88E-01
18540299	Chromium, hexavalent (and compounds)	5.82E-04	1.81E-05	4.08E-04
34590948	Dipropylene glycol monomethyl ether	3.13E+00	7.02E-01	2.83E+00

Table 17
Maximum One-Hour Concentration ($\mu\text{g}/\text{m}^3$) at PMI, MEIR, MEIW
Kirkhill Inc., Brea, CA

CAS	Substance Name	PMI	MEIR	MEIW
1175	SILICA [CRYSTALLINE, RESPIRABLE]	8.28E-01	4.04E-01	8.51E-01
56235	Carbon tetrachloride	1.82E-01	8.71E-02	1.86E-01
60117	4-Dimethylaminoazobenzene [POM]	1.84E-05	1.33E-05	1.91E-05
62533	Aniline	1.70E+00	3.66E-01	1.56E+00
67561	Methanol	7.77E+01	1.39E+01	6.96E+01
71432	Benzene	3.33E-01	7.42E-02	3.13E-01
75092	Methylene chloride {Dichloromethane}	7.80E-01	8.19E-02	6.80E-01
75150	Carbon disulfide	2.52E+01	4.53E+00	2.30E+01
75569	Propylene Oxide	8.56E-01	1.81E-01	7.84E-01
78933	Methyl ethyl ketone {2-Butanone}	1.05E+02	1.87E+01	9.37E+01
87683	Hexachlorobutadiene	1.92E-02	2.11E-03	1.67E-02
91203	Naphthalene [PAH, POM]	7.13E-02	1.21E-02	6.49E-02
91225	Quinoline	1.64E+00	6.16E-01	1.70E+00
92524	Biphenyl [POM]	1.61E-02	5.14E-03	1.60E-02
92875	Benzidine (and its salts) [POM]	5.59E-04	3.89E-05	4.80E-04
96128	1,2-Dibromo-3-chloropropane {DBCP}	2.31E-04	3.56E-05	2.37E-04
98862	Acetophenone	2.21E+00	4.16E-01	2.03E+00
101688	Methylene diphenyl diisocyanate {MDI} [POM]	7.84E-03	1.40E-03	7.01E-03
106898	Epichlorohydrin	3.96E-02	4.18E-03	3.43E-02
106990	1,3-Butadiene	1.78E-01	3.79E-02	1.64E-01
107028	Acrolein	9.16E-02	2.02E-02	8.60E-02
107131	Acrylonitrile	7.25E-02	2.32E-02	6.77E-02
108101	Methyl isobutyl ketone {Hexone}	4.06E+00	7.64E-01	3.67E+00
108883	Toluene	4.12E+02	7.34E+01	3.69E+02
111466	Diethylene glycol	1.65E+02	2.94E+01	1.48E+02
126998	Chloroprene	2.61E-01	3.59E-02	2.30E-01
463581	Carbonyl Sulfide	6.14E-01	1.34E-01	5.64E-01
532274	2-Chloroacetophenone	1.48E-02	1.56E-03	1.29E-02
7439965	Manganese	1.42E-03	5.22E-04	1.51E-03
7440439	Cadmium (Cd) Compounds	2.80E-05	1.37E-05	2.88E-05
7440473	Chromium	5.91E-03	2.78E-04	4.98E-03
7440508	Copper	3.40E-03	1.25E-03	3.62E-03
7440666	Zinc	5.74E-03	2.11E-03	6.11E-03
7664382	Phosphoric Acid	0.00E+00	0.00E+00	0.00E+00
7664417	Ammonia	2.52E+00	7.15E-01	2.65E+00
18540299	Chromium, hexavalent (and compounds)	2.97E-03	1.40E-04	2.50E-03
34590948	Dipropylene glycol monomethyl ether	7.09E+00	1.26E+00	6.34E+00

Table 18
Cancer Risk by Source - MEIR
Kirkhill Inc, Brea, CA

Release ID	Description	Cancer Risk
1	D1 Superior Boiler	3.35E-09
2	D2 Dixon Boiler	3.43E-09
24	D23 Mixer	8.83E-08
31	D31 Extruder	7.78E-07
35	C35 Smog Hog	1.51E-07
50	D50 Spray Booth	3.33E-11
66	C66 ESP Smog Hog	1.30E-07
67	C67 ESP Smog Hog	7.52E-09
69	C69 ESP Smog Hog	1.58E-08
74	D74 Press	5.52E-07
99	Dept 384 Press	4.06E-08
100	C100 Baghouse	2.11E-07
106	Rule 219 Blasting	0.00E+00
109	Rule 219 Printing	0.00E+00
110	Rule 219 Combustion	6.99E-10
112	Non-Permitted Extruders	1.23E-05
113	Unpermitted Ovens	6.91E-08
114	Misc. Materials Usage	0.00E+00
115	Cooling Towers	0.00E+00
116	Rule 219 Equip - Pressure Washer	1.09E-08
117	Calendaring	2.23E-09
118	Autoclaving	4.12E-07
119	Rotocuring	2.55E-08
120	D120 Mixer	4.13E-08
124	C24 SmogHog	5.26E-08
129	C129 Smog Hog	3.55E-08
139	C139 Baghouse	2.71E-07
150	C150 Smog Hog	0.00E+00
157	C157, C158, C159 Scrubber/HEPA,	1.87E-10
160	C160, C161, C162 Scrubber/HEPA,	6.13E-08
226	Dept 226 Press	3.45E-06
385	Dept 385 Press	1.53E-07
1092	Welding/Soldering	0.00E+00

Table 19
Cancer Risk by Source - MEIW
Kirkhill Inc, Brea, CA

Release ID	Description	Cancer Risk
1	D1 Superior Boiler	9.40E-10
2	D2 Dixon Boiler	9.06E-10
24	D23 Mixer	6.41E-09
31	D31 Extruder	2.70E-07
35	C35 Smog Hog	2.14E-08
50	D50 Spray Booth	7.73E-12
66	C66 ESP Smog Hog	2.28E-08
67	C67 ESP Smog Hog	1.44E-09
69	C69 ESP Smog Hog	5.16E-09
74	D74 Press	3.95E-07
99	Dept 384 Press	1.01E-08
100	C100 Baghouse	1.92E-08
106	Rule 219 Blasting	0.00E+00
109	Rule 219 Printing	0.00E+00
110	Rule 219 Combustion	2.02E-10
112	Non-Permitted Extruders	1.41E-05
113	Unpermitted Ovens	1.05E-08
114	Misc. Materials Usage	0.00E+00
115	Cooling Towers	0.00E+00
116	Rule 219 Equip - Pressure Washer	1.20E-09
117	Calendaring	4.09E-10
118	Autoclaving	2.97E-07
119	Rotocuring	1.28E-08
120	D120 Mixer	5.51E-09
124	C24 SmogHog	3.44E-09
129	C129 Smog Hog	3.85E-09
139	C139 Baghouse	2.78E-08
150	C150 Smog Hog	0.00E+00
157	C157, C158, C159 Scrubber/HEPA,	4.19E-11
160	C160, C161, C162 Scrubber/HEPA,	1.09E-08
226	Dept 226 Press	6.23E-07
385	Dept 385 Press	5.35E-08
1092	Welding/Soldering	0.00E+00

Table 20
Non-Cancer Chronic HI by Source - MEIR
Kirkhill Inc, Brea, CA

Release ID	Description	Non-Cancer Chronic HI
1	D1 Superior Boiler	1.65E-04
2	D2 Dixon Boiler	1.69E-04
24	D23 Mixer	9.46E-04
31	D31 Extruder	1.35E-04
35	C35 Smog Hog	1.00E-03
50	D50 Spray Booth	3.33E-06
66	C66 ESP Smog Hog	8.63E-04
67	C67 ESP Smog Hog	4.98E-05
69	C69 ESP Smog Hog	1.05E-04
74	D74 Press	4.52E-04
99	Dept 384 Press	3.32E-05
100	C100 Baghouse	2.42E-03
106	Rule 219 Blasting	2.01E-05
109	Rule 219 Printing	0.00E+00
110	Rule 219 Combustion	2.54E-05
112	Non-Permitted Extruders	3.14E-04
113	Unpermitted Ovens	4.58E-04
114	Misc. Materials Usage	1.46E-02
115	Cooling Towers	0.00E+00
116	Rule 219 Equip - Pressure Washer	1.85E-05
117	Calendaring	6.60E-05
118	Autoclaving	1.98E-03
119	Rotocuring	8.96E-06
120	D120 Mixer	2.32E-04
124	C24 SmogHog	3.48E-04
129	C129 Smog Hog	2.35E-04
139	C139 Baghouse	1.60E-03
150	C150 Smog Hog	0.00E+00
157	C157, C158, C159 Scrubber/HEPA,	2.02E-07
160	C160, C161, C162 Scrubber/HEPA,	6.62E-05
226	Dept 226 Press	1.49E-03
385	Dept 385 Press	1.25E-04
1092	Welding/Soldering	7.81E-04

Table 21
Non-Cancer Chronic HI by Source - MEIW
Kirkhill Inc, Brea, CA

Release ID	Description	Non-Cancer Chronic HI
1	D1 Superior Boiler	6.46E-04
2	D2 Dixon Boiler	6.23E-04
24	D23 Mixer	9.59E-04
31	D31 Extruder	6.57E-04
35	C35 Smog Hog	1.98E-03
50	D50 Spray Booth	1.08E-05
66	C66 ESP Smog Hog	2.11E-03
67	C67 ESP Smog Hog	1.34E-04
69	C69 ESP Smog Hog	4.78E-04
74	D74 Press	4.52E-03
99	Dept 384 Press	1.15E-04
100	C100 Baghouse	3.08E-03
106	Rule 219 Blasting	8.12E-05
109	Rule 219 Printing	0.00E+00
110	Rule 219 Combustion	1.03E-04
112	Non-Permitted Extruders	7.08E-03
113	Unpermitted Ovens	9.70E-04
114	Misc. Materials Usage	5.89E-02
115	Cooling Towers	0.00E+00
116	Rule 219 Equip - Pressure Washer	2.84E-05
117	Calendaring	1.70E-04
118	Autoclaving	1.99E-02
119	Rotocuring	6.28E-05
120	D120 Mixer	4.33E-04
124	C24 SmogHog	3.18E-04
129	C129 Smog Hog	3.56E-04
139	C139 Baghouse	2.29E-03
150	C150 Smog Hog	0.00E+00
157	C157, C158, C159 Scrubber/HEPA,	6.34E-07
160	C160, C161, C162 Scrubber/HEPA,	1.64E-04
226	Dept 226 Press	3.75E-03
385	Dept 385 Press	6.11E-04
1092	Welding/Soldering	1.95E-03

Table 22
Non-Cancer Acute HI by Source - PMI
Kirkhill Inc, Brea, CA

Release ID	Description	Non-Cancer Acute HI
1	D1 Superior Boiler	6.67E-04
2	D2 Dixon Boiler	6.96E-04
24	D23 Mixer	2.01E-04
31	D31 Extruder	4.19E-04
35	C35 Smog Hog	5.58E-03
50	D50 Spray Booth	1.93E-05
66	C66 ESP Smog Hog	3.81E-03
67	C67 ESP Smog Hog	2.42E-04
69	C69 ESP Smog Hog	9.64E-04
74	D74 Press	7.16E-04
99	Dept 384 Press	1.97E-05
100	C100 Baghouse	8.75E-05
106	Rule 219 Blasting	0.00E+00
109	Rule 219 Printing	2.20E-03
110	Rule 219 Combustion	2.21E-04
112	Non-Permitted Extruders	4.23E-03
113	Unpermitted Ovens	1.13E-03
114	Misc. Materials Usage	1.77E-02
115	Cooling Towers	0.00E+00
116	Rule 219 Equip - Pressure Washer	2.35E-05
117	Calendaring	1.92E-04
118	Autoclaving	1.68E-02
119	Rotocuring	5.76E-05
120	D120 Mixer	3.33E-05
124	C24 SmogHog	1.48E-03
129	C129 Smog Hog	6.91E-04
139	C139 Baghouse	6.71E-05
150	C150 Smog Hog	0.00E+00
157	C157, C158, C159 Scrubber/HEPA,	4.14E-08
160	C160, C161, C162 Scrubber/HEPA,	5.11E-05
226	Dept 226 Press	8.55E-04
385	Dept 385 Press	1.19E-04
1092	Welding/Soldering	3.40E-05

Table 23
Non-Cancer Acute HI by Source - MEIR
Kirkhill Inc, Brea, CA

Release ID	Description	Non-Cancer Acute HI
1	D1 Superior Boiler	1.99E-04
2	D2 Dixon Boiler	2.08E-04
24	D23 Mixer	1.52E-04
31	D31 Extruder	1.23E-04
35	C35 Smog Hog	1.33E-03
50	D50 Spray Booth	6.70E-06
66	C66 ESP Smog Hog	1.37E-03
67	C67 ESP Smog Hog	7.62E-05
69	C69 ESP Smog Hog	1.87E-04
74	D74 Press	9.38E-05
99	Dept 384 Press	4.77E-06
100	C100 Baghouse	4.46E-05
106	Rule 219 Blasting	0.00E+00
109	Rule 219 Printing	3.94E-04
110	Rule 219 Combustion	3.95E-05
112	Non-Permitted Extruders	1.99E-04
113	Unpermitted Ovens	5.39E-04
114	Misc. Materials Usage	3.14E-03
115	Cooling Towers	0.00E+00
116	Rule 219 Equip - Pressure Washer	1.39E-05
117	Calendaring	6.19E-05
118	Autoclaving	1.78E-03
119	Rotocuring	8.88E-06
120	D120 Mixer	1.78E-05
124	C24 SmogHog	1.38E-03
129	C129 Smog Hog	5.98E-04
139	C139 Baghouse	2.68E-05
150	C150 Smog Hog	0.00E+00
157	C157, C158, C159 Scrubber/HEPA,	1.22E-08
160	C160, C161, C162 Scrubber/HEPA,	1.87E-05
226	Dept 226 Press	2.59E-04
385	Dept 385 Press	1.88E-05
1092	Welding/Soldering	1.25E-05

Table 24
Non-Cancer Acute HI by Source - MEIW
Kirkhill Inc, Brea, CA

Source ID	Description	Non-Cancer Acute HI
1	D1 Superior Boiler	7.25E-04
2	D2 Dixon Boiler	7.49E-04
24	D23 Mixer	2.11E-04
31	D31 Extruder	4.22E-04
35	C35 Smog Hog	6.01E-03
50	D50 Spray Booth	1.92E-05
66	C66 ESP Smog Hog	3.77E-03
67	C67 ESP Smog Hog	2.38E-04
69	C69 ESP Smog Hog	1.06E-03
74	D74 Press	6.80E-04
99	Dept 384 Press	1.94E-05
100	C100 Baghouse	8.74E-05
106	Rule 219 Blasting	0.00E+00
109	Rule 219 Printing	1.95E-03
110	Rule 219 Combustion	1.96E-04
112	Non-Permitted Extruders	3.57E-03
113	Unpermitted Ovens	1.11E-03
114	Misc. Materials Usage	1.58E-02
115	Cooling Towers	0.00E+00
116	Rule 219 Equip - Pressure Washer	2.07E-05
117	Calendaring	1.96E-04
118	Autoclaving	1.46E-02
119	Rotocuring	5.91E-05
120	D120 Mixer	3.27E-05
124	C24 SmogHog	1.52E-03
129	C129 Smog Hog	7.55E-04
139	C139 Baghouse	7.17E-05
150	C150 Smog Hog	0.00E+00
157	C157, C158, C159 Scrubber/HEPA,	4.31E-08
160	C160, C161, C162 Scrubber/HEPA,	5.31E-05
226	Dept 226 Press	7.67E-04
385	Dept 385 Press	1.07E-04
1092	Welding/Soldering	3.62E-05

Figures

See Executive Summary Figures

Attachment 1:

HRA Summary Form



South Coast Air Quality Management District
 21865 Copley Drive, Diamond Bar, CA 91765-4182
 (909) 396-2000 • www.aqmd.gov

HEALTH RISK ASSESSMENT SUMMARY FORM

(Required in Executive Summary of HRA)

Facility Name : Kirkhill Inc.
 Facility Address: 300 E Cypress Street
Brea, CA 92821
 Type of Business: Rubber Manufacturing
 SCAQMD ID No.: 187823 (Formerly 1744)

A. Cancer Risk

(One in a million means one chance in a million of getting cancer from being constantly exposed to a certain level of a chemical over a period of time)

1. Inventory Reporting Year : 2015
2. Maximum Cancer Risk to Receptors : *(Offsite and residence = 30-year exposure, worker = 25-year exposure)*

a. Offsite	<u>421</u>	in a million	Location:	<u>Fenceline; UTM X = 417,356, UTM Y = 3,754,101</u>
b. Residence	<u>18.8</u>	in a million	Location:	<u>UTM X = 417,400; UTM Y = 3,754,250</u>
c. Worker	<u>15.9</u>	in a million	Location:	<u>UTM X = 417,350; UTM Y = 3,754,100</u>
3. Substances Accounting for 90% of Cancer Risk: HexChrome, benzidine, 1,3-butadiene, and acrylonitrile
 Processes Accounting for 90% of Cancer Risk: Non-permitted Extruders, Dept 226 Press
4. Cancer Burden for a 70-yr exposure: *(Cancer Burden = [cancer risk] x [# of people exposed to specific cancer risk])*

a. Cancer Burden	<u>0.072</u>
b. Number of people exposed to >1 per million cancer risk for a 70-yr exposure	<u>19,724</u>
c. Maximum distance to edge of 70-year, 1 x 10 ⁻⁶ cancer risk isopleth (meters)	<u>1,500</u>

B. Hazard Indices

*[Long Term Effects (chronic) and Short Term Effects (acute)]
 (non-carcinogenic impacts are estimated by comparing calculated concentration to identified Reference Exposure Levels, and expressing this comparison in terms of a "Hazard Index")*

1. Maximum Chronic Hazard Indices:

a. Residence HI:	<u>0.03</u>	Location:	<u>417,400; 3,754,250</u>	toxicological endpoint:	<u>Respiratory</u>
b. Worker HI :	<u>0.11</u>	Location:	<u>417,350; 3,754,100</u>	toxicological endpoint:	<u>Respiratory</u>
2. Substances Accounting for 90% of Chronic Hazard Index: Crystalline silica, acrolein, and toluene
3. Maximum 8-hour Chronic Hazard Index:

8-Hour Chronic HI:	<u>0.02</u>	Location:	<u>417,335.3; 3754055.2</u>	toxicological endpoint:	<u>Central Nervous System</u>
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4. Substances Accounting for 90% of 8-hour Chronic Hazard Index: Carbonyl sulfide
5. Maximum Acute Hazard Index:

PMI:	<u>0.06</u>	Location:	<u>417,335.3; 3754055.2</u>	toxicological endpoint:	<u>Respiratory</u>
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6. Substances Accounting for 90% of Acute Hazard Index: Toluene and acrolein

C. Public Notification and Risk Reduction

1. Public Notification Required? Yes No
 a. If 'Yes', estimated population exposed to risks > 10 in a million for a 30-year exposure, or an HI >1
400
2. Risk Reduction Required? Yes No

Revised 4/30/2015