Rule 1200 Health Risk Assessment

Facility Name:	Costco Gasoline (Loc No 781)
Facility ID:	APCD2023-SITE-04416
Application:	APCD2023-APP-007994
Project Engineer:	Karen Yimnei Chan
Modeler:	Bill Reeve
Toxics Risk Analyst:	Maria Galvez
Date Submitted to Toxics:	01/09/2024
Date Completed by Toxics:	01/29/2024
HRA Tools Used:	Lakes-AERMOD (Version 23132)/HARP (v22118)

The following estimated risks are valid only for the input data provided by the Project Engineer.

Only the higher of either worker or residential risk is presented in the following results.

Estimated Risk Levels:

Maximum Individual Cancer Risk (Residential)	= 46.22 in one million
Chronic Noncancer Health Hazard Index (Worker)	= 1.16
8-Hour Noncancer Health Hazard Index (Worker)	= No Health Data
Acute Health Hazard Index (Worker)	= 3.23

Input Data Provided by Project Engineer:

Type of Source:	Gas Station
Controls Description:	OPW Phase I, Healy Phase II and Arid Permeator
T-BACT:	Yes.

Worst-Case TAC Emissions Increase:

Loading

Toxic Air Contaminant	Hourly Emission Rate (lb/hr)	Annual Emission Rate (lb/yr)
BENZENE	5.4E-02	3.8E+01
ETHYL BENZENE	1.8E-02	1.3E+01
HEXANE-N	2.5E-01	1.8E+02
TOLUENE	2.0E-01	1.4E+02
XYLENES	7.2E-02	5.0E+01

Breathing

Toxic Air Contaminant	Hourly Emission Rate (lb/hr)	Annual Emission Rate (lb/yr)
BENZENE	6.9E-04	6.0E+00
ETHYL BENZENE	2.3E-04	2.0E+00
HEXANE-N	3.2E-03	2.8E+01
TOLUENE	2.5E-03	2.2E+01
XYLENES	9.2E-04	8.1E+00

Refueling

Toxic Air Contaminant	Hourly Emission Rate (lb/hr)	Annual Emission Rate (lb/yr)
BENZENE	3.8E-03	2.2E+01
ETHYL BENZENE	1.3E-03	7.5E+00
HEXANE-N	1.8E-02	1.0E+02
TOLUENE	1.4E-02	8.2E+01
XYLENES	5.1E-03	3.0E+01

Hose Permeation

Toxic Air Contaminant	Hourly Emission Rate (lb/hr)	Annual Emission Rate (lb/yr)
BENZENE	3.9E-04	2.3E+00
ETHYL BENZENE	1.3E-04	7.6E-01
HEXANE-N	1.8E-03	1.1E+01
TOLUENE	1.4E-03	8.3E+00
XYLENES	5.2E-04	3.0E+00

Spillage

Toxic Air Contaminant	Hourly Emission Rate (lb/hr)	Annual Emission Rate (lb/yr)
BENZENE	3.5E-02	2.0E+02
ETHYL BENZENE	5.5E-02	3.2E+02
HEXANE-N	6.2E-02	3.6E+02
TOLUENE	2.8E-01	1.6E+03
XYLENES	8.3E-02	4.8E+02

Release Parameters:

Loading

Stack Height (ft)	12
Stack Diameter (ft)	0.25
Temperature (deg F)	ambient
Exhaust Flow Rate (acfm)	N/A

Breathing

Stack Height (ft)	12
Stack Diameter (ft)	0.25
Temperature (deg F)	ambient
Exhaust Flow Rate (acfm)	N/A

Volume Sources

Release height (ft)	3.66
Initial horizontal dimension (ft)	19
Initial vertical dimension (ft)	6.1

Discussion

The HRA was conducted in accordance with EPA and OEHHA guidance and District standard procedures. Modeling was conducted in accordance with the 2022 CARB/CAPCOA Gasoline Service Station Industrywide Risk Assessment Technical Guidance document. One point source and four volume sources were modeled with refined air dispersion modeling using EPA's AERMOD model, AERMET (Version 22112) processed Chula Vista 2010/2012 sigma theta updated meteorology data, AERMAP terrain processing, and urban dispersion coefficients. Building downwash effects were calculated using the EPA BPIP-Prime model. The receptor grid was sufficiently dense to identify maximum impacts.

These risk results are based on the risk scenario calculations and health data at the time of the review, and should not be scaled with revised emissions rates without consulting with the Toxics Section.

*HARP - HRACalc v22118 1/25/2024 2:05:17 PM - Cancer Risk - Input File: D:\7994_Costco Gasoline (Loc. No. 781)\7994_HARP\hra\resident_HRAInput.hra

REC	GRP	NETID	X	Y	CONC	POLID	POLABBRE	RISK_SUM	SCENARIO
12331	ALL		492285	3608072	0.61516	71432	Benzene	4.16E-05	30YrCancerRMP_InhSoilDermMMilk_FAH16to70
12331	ALL		492285	3608072	0.780021	100414	Ethyl Benz	4.59E-06	30YrCancerRMP_InhSoilDermMMilk_FAH16to70
12331	ALL		492285	3608072	1.569505	110543	Hexane	0.00E+00	30YrCancerRMP_InhSoilDermMMilk_FAH16to70
12331	ALL		492285	3608072	4.222581	108883	Toluene	0.00E+00	30YrCancerRMP_InhSoilDermMMilk_FAH16to70
12331	ALL		492285	3608072	1.304397	1330207	Xylenes	0.00E+00	30YrCancerRMP_InhSoilDermMMilk_FAH16to70
								4.62E-05	

*HARP - HRACalc v22118 1/25/2024 2:18:51 PM - Chronic Risk - Input File: D:\7994_Costco Gasoline (Loc. No. 781)\7994_HARP\hra\worker_HRAInput.hra

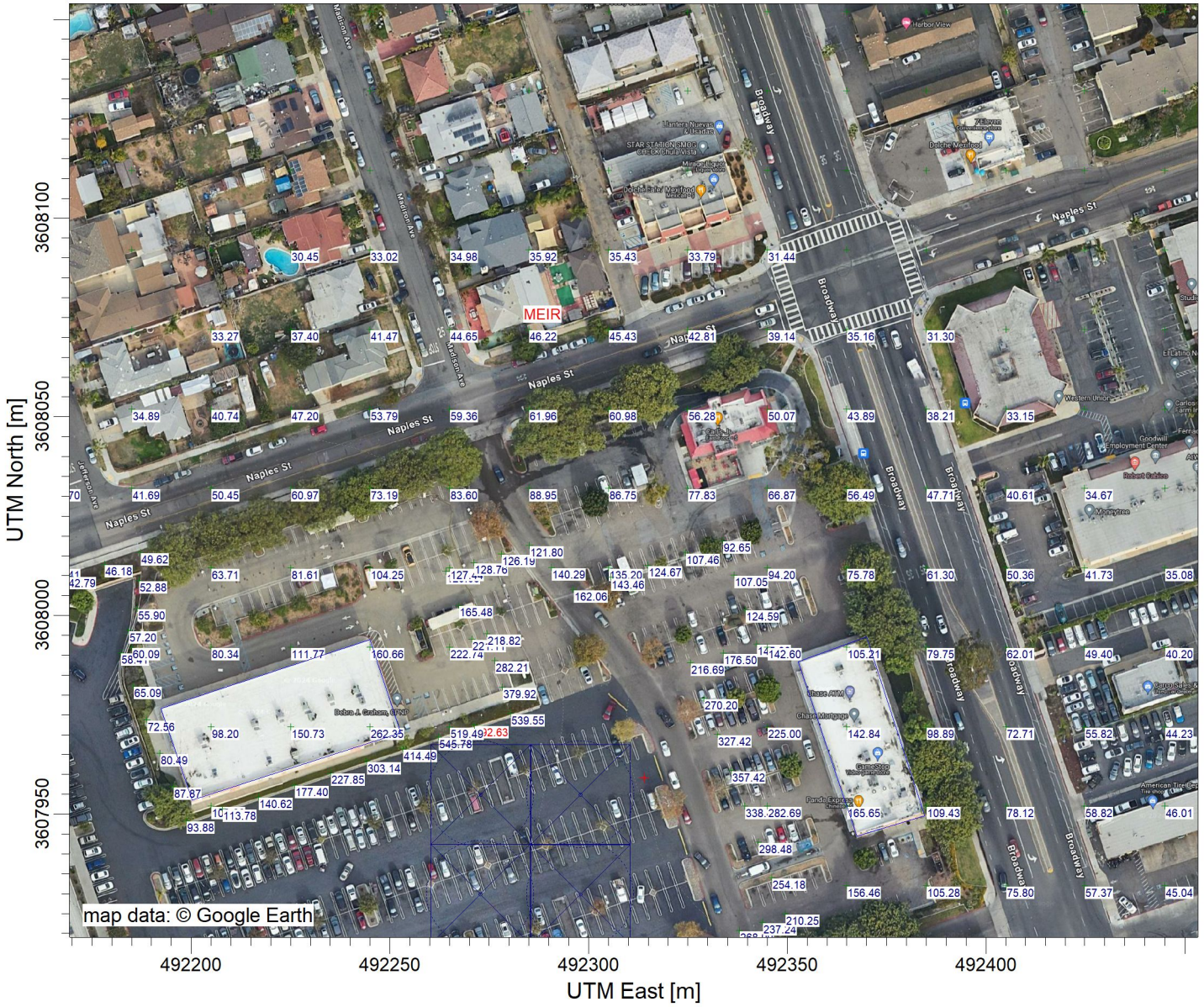
REC	GRP	NETID	X	Y	CONC	POLID	POLABBRE	BLOOD	SCENARIO
11586	ALL		492245	3607972	3.477774	71432	Benzene	1.16E+00	NonCancerChronicDerived_InhSoilDerm
11586	ALL		492245	3607972	4.591862	100414	Ethyl Benz	0.00E+00	NonCancerChronicDerived_InhSoilDerm
11586	ALL		492245	3607972	8.461091	110543	Hexane	0.00E+00	NonCancerChronicDerived_InhSoilDerm
11586	ALL		492245	3607972	24.49496	108883	Toluene	0.00E+00	NonCancerChronicDerived_InhSoilDerm
11586	ALL		492245	3607972	7.527645	1330207	Xylenes	0.00E+00	NonCancerChronicDerived_InhSoilDerm
								1.1593	

*HARP - HRACalc v22118 1/25/2024 2:18:51 PM - Acute Risk - Input File: D:\7994_Costco Gasoline (Loc. No. 781)\7994_HARP\hra\worker_HRAInput.hra

REC	GRP	NETID	X	Y	CONC	POLID	POLABBRE	IMMUN	SCENARIO
11586	ALL		492245	3607972	87.25723	71432	Benzene	3.23E+00	NonCancerAcute
11586	ALL		492245	3607972	76.59185	100414	Ethyl Benz	0.00E+00	NonCancerAcute
11586	ALL		492245	3607972	301.0719	110543	Hexane	0.00E+00	NonCancerAcute
11586	ALL		492245	3607972	482.7307	108883	Toluene	0.00E+00	NonCancerAcute
11586	ALL		492245	3607972	156.3204	1330207	Xylenes	0.00E+00	NonCancerAcute
								3.2317	

PROJECT TITLE:

APP007994 Cancer Risk
MEIR 12331



COMMENTS:

SOURCES:

5

RECEPTORS:

22798

OUTPUT TYPE:

Concentration

MAX:

593 ug/m^3

COMPANY NAME:

MODELER:

DATE:

1/25/2024

SCALE: 1:1,600

0 0.04 km

PROJECT NO.:

PROJECT TITLE:

APP007994 Chronic HHI
MEIW 11586

COMMENTS:

SOURCES:

5

RECEPTORS:

22798

OUTPUT TYPE:

Concentration

MAX:

2.62 ug/m^3

COMPANY NAME:

MODELER:

DATE:

1/25/2024

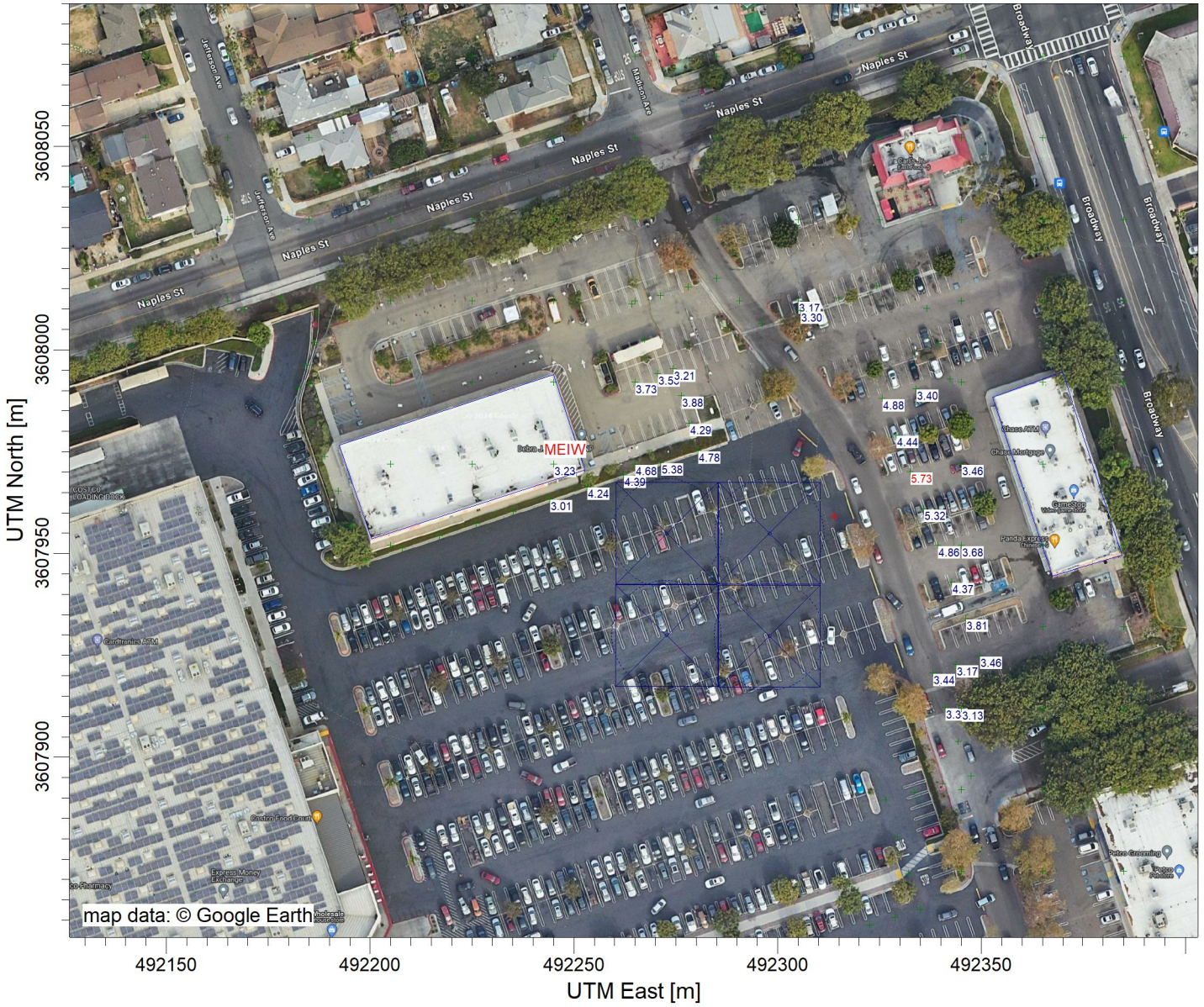
SCALE: 1:1,714

0 0.05 km

PROJECT NO.:

PROJECT TITLE:

APP007994 Acute HHI
MEIW 11586



COMMENTS:

SOURCES:

5

RECEPTORS:

22798

OUTPUT TYPE:

Concentration

MAX:

5.73 ug/m^3

COMPANY NAME:

MODELER:

DATE:

1/25/2024

SCALE: 1:1,560

0 0.04 km

PROJECT NO.:

Outputs			
12612.04	lb/year	*Loading	Vapor
2016	lb/year	Breathing	Vapor
7476	lb/year	Refueling	Vapor
756	lb/year	Hose Permeat	Vapor
20160	lb/year	Spillage	Liquid

Maximum Operating hours for processes

Refueling, Hose Permeation, Spillage

Hours of Operation	
Hours/Day	16
Days/Week	7
Days/Year	365

Breathing

Hours of Operation	
Hours/Day	24
Days/Week	7
Days/Year	365

Emissions per San Diego EIS speciation outlined on website

Gasoline Speciation	Weight % Vapor	Weight % Liquid
Benzene	0.30%	1%
Ethyl Benzene	0.10%	1.60%
Hexane	1.40%	1.80%
Toluene	1.10%	8%
Xylene	0.40%	2.40%
2,2,4-Trimethylpentane	0.70%	0.80%

TAC Emissions from different gasoline loading and dispensing processes

Gas Speciation	Loading		Breathing		Refueling		Hose Permeation		Spillage (liquid)		Total	
	lbs/hr	lbs/year	lbs/hr	lbs/year	lbs/hr	lbs/year	lbs/hr	lbs/year	lbs/hr	lbs/year	lbs/hr	lbs/year
Benzene	5.40E-02	37.836	6.90E-04	6.048	3.84E-03	22.428	3.88E-04	2.268	3.45E-02	201.6	0.093	270.18
Ethyl Benzene	1.80E-02	12.612	2.30E-04	2.016	1.28E-03	7.476	1.29E-04	0.756	5.52E-02	322.56	0.075	345.42
Hexane	2.52E-01	176.569	3.22E-03	28.224	1.79E-02	104.664	1.81E-03	10.584	6.21E-02	362.88	0.337	682.92
Toluene	1.98E-01	138.732	2.53E-03	22.176	1.41E-02	82.236	1.42E-03	8.316	2.76E-01	1612.8	0.492	1864.26
Xylene	7.20E-02	50.448	9.21E-04	8.064	5.12E-03	29.904	5.18E-04	3.024	8.28E-02	483.84	0.161	575.28
2,2,4-Trimethylpentane	1.26E-01	88.284	1.61E-03	14.112	8.96E-03	52.332	9.06E-04	5.292	2.76E-02	161.28	0.165	321.30

Note: The values in these cell are updated. Loading was calculated as loading event when filling tank to max capacity.

* loading loss caused by the displacement of the gasoline with additive is included in the total loading loss

San Diego Air Pollution Control District
Supplemental Application Information
Rule 1200 Toxics Evaluation

(ALL REQUESTED INFORMATION IS IMPORTANT - PLEASE FILL BLUE CELLS)

Facility Name: Costco (#781)
Equipment Location: 1128 Broadway, Chula Vista, CA 91911

Project Description: Retail gas station
Control Equipment: OPW Phase I, Healy Phase II and Arid Permeator

Operating Schedule for refueling, hose	Hours per day	16	Weeks per Year:	52
	Days per Week:	7	Days per Year:	365
Max. Operating Schedule:	Hours per day	24	Weeks per Year:	52
	Days per Week:	7	Days per Year:	365

How are the emissions from this project released into the outdoor air? (Check all that apply)

Point Source	Non-Point Source
Exhaust Stack: Vent pipes for breathing	Refueling, hose permeation, spillage

Point Source

Parameter	Point Source #1
Height of release above ground (ft)	12.0
Stack Diameter (or length x width) (ft)	0.25
Exhaust Gas Temperature (°F)[1]	Ambient
Exhaust Gas Flow (ACFM)	NA
Direction of Flow[2]	vertical
Flow Obstruction[3]	Yes
Distance to Nearest Property Line (+/- 10ft)	90.00

[1] Use "70 °F" or "Ambient" if unknown
[2] if "other" describe: There is an obstruction to vertical flow with the pressure/ vacuum cap installed at the end of 2" vent riser pipes
[3] if "other" describe:

AERIAL MAP AND FACILITY PLOT PLAN must be attached and labeled with **Release Point(s) and Building(s)**
(includes facility and neighboring buildings within 5x the release height of a point source(s)).

Parameter	Building A	Building B	
Point Source(s)	#1	#1	
Point Source Location	point source #1,non point source #1	point source #1,non point source #1	
Building Length (ft) (optional)	180.93 ft	17 ft	
Building Width (ft) (optional)	79.85 ft	8 ft	
Building Height above ground (ft)	24 ft	9 ft	

San Diego APCD Use Only

Additional Rule 1200 Submittal Information

Submittal Date:	1/29/2024	Site ID:	
Project Engineer:	Karen Chan	Appl. Number(s):	
Fees Collected:		PTO No. (if existing):	NA

HARP2 - HRACalc (dated 22118) 1/25/2024 2:05:17 PM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors loaded successfully
****
RISK SCENARIO SETTINGS

Receptor Type: Resident
Scenario: All
Calculation Method: Derived

****
EXPOSURE DURATION PARAMETERS FOR CANCER

Start Age: -0.25
Total Exposure Duration: 30

Exposure Duration Bin Distribution
3rd Trimester Bin: 0.25
0<2 Years Bin: 2
2<9 Years Bin: 0
2<16 Years Bin: 14
16<30 Years Bin: 14
16 to 70 Years Bin: 0

****
PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments. The remaining pathways are only used for cancer and noncancer chronic assessments.

Inhalation: True
Soil: True
Dermal: True
Mother's milk: True
Water: False
Fish: False
Homegrown crops: False
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

****
INHALATION

Daily breathing rate: RMP

Worker Adjustment Factors
Worker adjustment factors enabled: NO

Fraction at time at home
3rd Trimester to 16 years: OFF
16 years to 70 years: ON

****
SOIL & DERMAL PATHWAY SETTINGS

Deposition rate (m/s): 0.05
Soil mixing depth (m): 0.01
Dermal climate: Warm

****
TIER 2 SETTINGS
Tier2 not used.

****

Calculating cancer risk
Cancer risk breakdown by pollutant and receptor saved to: D:\7994_Costco Gasoline (Loc. No. 781)\7994_HARP\hra\resident_CancerRisk.csv
Cancer risk total by receptor saved to: D:\7994_Costco Gasoline (Loc. No. 781)\7994_HARP\hra\resident_CancerRiskSumByRec.csv
Calculating chronic risk
Chronic risk breakdown by pollutant and receptor saved to: D:\7994_Costco Gasoline (Loc. No. 781)\7994_HARP\hra\resident_NCChronicRisk.csv
Chronic risk total by receptor saved to: D:\7994_Costco Gasoline (Loc. No. 781)\7994_HARP\hra\resident_NCChronicRiskSumByRec.csv
Calculating acute risk
Acute risk breakdown by pollutant and receptor saved to: D:\7994_Costco Gasoline (Loc. No. 781)\7994_HARP\hra\resident_NCAcuteRisk.csv
Acute risk total by receptor saved to: D:\7994_Costco Gasoline (Loc. No. 781)\7994_HARP\hra\resident_NCAcuteRiskSumByRec.csv
HRA ran successfully

*** MODELOPTs: RegDFAULT CONC ELEV URBAN SigA Data

*** POINT SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	STACK HEIGHT (METERS)	STACK TEMP. (DEG.K)	STACK EXIT VEL. (M/SEC)	STACK DIAMETER (METERS)	BLDG EXISTS	URBAN SOURCE	CAP/ HOR	EMIS RATE SCALAR VARY BY
STCK1	0	0.10000E+01	492313.9	3607959.1	17.1	3.66	-0.00	0.00	0.08	NO	YES	CAP	

*** MODELOPTs: RegDFAULT CONC ELEV URBAN SigA Data

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY	AIRCRAFT
VOL1	0	0.25000E+00	492272.8	3607955.0	16.6	1.12	5.81	1.86	YES		NO
VOL2	0	0.25000E+00	492298.0	3607954.9	16.9	1.12	5.81	1.86	YES		NO
VOL3	0	0.25000E+00	492272.8	3607929.9	16.6	1.12	5.81	1.86	YES		NO
VOL4	0	0.25000E+00	492297.9	3607929.8	16.9	1.12	5.81	1.86	YES		NO

*** MODELOPTs: RegDFAULT CONC ELEV URBAN SigA Data

*** MODEL SETUP OPTIONS SUMMARY ***

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- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

** Model Options Selected:
     * Model Uses Regulatory DEFAULT Options
     * Model Is Setup For Calculation of Average CONCentration Values.
     * NO GAS DEPOSITION Data Provided.
     * NO PARTICLE DEPOSITION Data Provided.
     * Model Uses NO DRY DEPLETION. DDPLETE  =  F
     * Model Uses NO WET DEPLETION. WETDPLT  =  F
     * Stack-tip Downwash.
     * Model Accounts for ELEVated Terrain Effects.
     * Use Calms Processing Routine.
     * Use Missing Data Processing Routine.
     * No Exponential Decay.
     * Model Uses URBAN Dispersion Algorithm for the SBL for     5 Source(s),
       for Total of    1 Urban Area(s):
  Urban Population =    277220.0 ;  Urban Roughness Length =  1.000 m
     * Urban Roughness Length of 1.0 Meter Used.
     * Option for Capped & Horiz Stacks Selected With:
         1 Capped Stack(s); and         0 Horizontal Stack(s)
     * CCVR_Sub - Meteorological data includes CCVR substitutions
     * TEMP_Sub - Meteorological data includes TEMP substitutions
     * Model Assumes No FLAGPOLE Receptor Heights.
     * The User Specified a Pollutant Type of: OTHER

**Model Calculates  1 Short Term Average(s) of:   1-HR
    and Calculates PERIOD Averages

**This Run Includes:      5 Source(s);       3 Source Group(s); and   22798 Receptor(s)

               with:      1 POINT(s), including
                          1 POINTCAP(s) and      0 POINTHOR(s)
                and:      4 VOLUME source(s)
                and:      0 AREA type source(s)
                and:      0 LINE source(s)
                and:      0 RLINE/RLINEXT source(s)
                and:      0 OPENPIT source(s)
                and:      0 BUOYANT LINE source(s) with a total of     0 line(s)
                and:      0 SWPOINT source(s)
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**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date:  22112

**Output Options Selected:
         Model Outputs Tables of PERIOD Averages by Receptor
         Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =    55.00 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
                 Emission Units = GRAMS/SEC                              ;  Emission Rate Unit Factor =   0.10000E+07
                 Output Units   = MICROGRAMS/M**3

**Approximate Storage Requirements of Model =      8.1 MB of RAM.

**Input Runstream File:          aermod.inp
**Output Print File:             aermod.out

**Detailed Error/Message File:   7994_Costco.err
**File for Summary of Results:   7994_Costco.sum
```



```
*** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  SigA Data

                                   *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
                                                      (1=YES; 0=NO)

          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
```

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1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1
```

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** MODELOPTs: RegDFAULT CONC ELEV URBAN SigA Data

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: C:\AERMET\AERMET 21112 PROJECTS\AERMET 22112 data\CVA_2010_2012_sigma_v22112.SFC Met Version: 22112
Profile file: C:\AERMET\AERMET 21112 PROJECTS\AERMET 22112 data\CVA_2010_2012_sigma_v22112.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 23188 Upper air station no.: 3190
Name: SAN_DIEGO/LINDBERGH_FIELD Name: UNKNOWN
Year: 2010 Year: 2010

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
10	01	01	1	01	-1.0	0.031	-9.000	-9.000	-999.	13.	2.6	0.03	0.98	1.00	0.89	48.	10.0	283.1	10.0
10	01	01	1	02	-1.0	0.030	-9.000	-9.000	-999.	13.	2.6	0.03	0.98	1.00	0.89	62.	10.0	283.1	10.0
10	01	01	1	03	-1.0	0.031	-9.000	-9.000	-999.	13.	2.6	0.03	0.98	1.00	0.89	45.	10.0	282.5	10.0
10	01	01	1	04	-1.0	0.030	-9.000	-9.000	-999.	13.	2.6	0.03	0.98	1.00	0.89	79.	10.0	281.9	10.0
10	01	01	1	05	-0.2	0.015	-9.000	-9.000	-999.	4.	1.3	0.03	0.98	1.00	0.44	356.	10.0	280.8	10.0
10	01	01	1	06	-1.0	0.031	-9.000	-9.000	-999.	13.	2.6	0.03	0.98	1.00	0.89	45.	10.0	280.8	10.0
10	01	01	1	07	-0.8	0.031	-9.000	-9.000	-999.	13.	3.3	0.03	0.98	1.00	0.89	47.	10.0	281.9	10.0
10	01	01	1	08	-0.6	0.030	-9.000	-9.000	-999.	13.	4.3	0.03	0.98	0.49	0.89	78.	10.0	282.5	10.0

```
 10 01 01   1 09   19.1  0.086  0.293  0.014   47.   61.     -3.1  0.03   0.98   0.30    0.89   24.   10.0  286.4   10.0
 10 01 01   1 10   60.3  0.098  0.561  0.010  106.   73.     -1.4  0.03   0.98   0.23    0.89  351.   10.0  288.1   10.0
 10 01 01   1 11   59.0  0.158  0.715  0.009  224.  150.     -6.0  0.03   0.98   0.21    1.78  311.   10.0  290.8   10.0
 10 01 01   1 12   67.1  0.189  0.858  0.008  341.  197.     -9.1  0.03   0.98   0.20    2.23  313.   10.0  292.5   10.0
 10 01 01   1 13   66.4  0.159  0.922  0.008  427.  153.     -5.5  0.03   0.98   0.20    1.78  305.   10.0  293.6   10.0
 10 01 01   1 14   57.3  0.187  0.919  0.008  490.  193.    -10.2  0.03   0.98   0.21    2.23  278.   10.0  294.8   10.0
 10 01 01   1 15   38.8  0.237  0.827  0.008  526.  277.    -31.0  0.03   0.98   0.24    3.12  289.   10.0  293.1   10.0
 10 01 01   1 16   20.7  0.173  0.678  0.008  543.  174.    -22.7  0.03   0.98   0.33    2.23  296.   10.0  291.4   10.0
 10 01 01   1 17   -1.5  0.046 -9.000 -9.000 -999.   46.      5.7  0.03   0.98   0.60    1.34  337.   10.0  291.4   10.0
 10 01 01   1 18   -1.6  0.046 -9.000 -9.000 -999.   23.      5.4  0.03   0.98   1.00    1.34  337.   10.0  290.3   10.0
 10 01 01   1 19   -0.2  0.015 -9.000 -9.000 -999.    5.      1.8  0.03   0.98   1.00    0.44  252.   10.0  288.6   10.0
 10 01 01   1 20   -0.2  0.015 -9.000 -9.000 -999.    4.      1.8  0.03   0.98   1.00    0.44  113.   10.0  287.5   10.0
 10 01 01   1 21   -0.8  0.030 -9.000 -9.000 -999.   13.      3.3  0.03   0.98   1.00    0.89  122.   10.0  286.9   10.0
 10 01 01   1 22   -2.1  0.046 -9.000 -9.000 -999.   23.      4.0  0.03   0.98   1.00    1.34   99.   10.0  286.4   10.0
 10 01 01   1 23   -1.0  0.030 -9.000 -9.000 -999.   13.      2.6  0.03   0.98   1.00    0.89  331.   10.0  285.3   10.0
 10 01 01   1 24   -1.0  0.031 -9.000 -9.000 -999.   13.      2.6  0.03   0.98   1.00    0.89   40.   10.0  285.3   10.0


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 10 01 01 01   10.0 1   48.    0.89   283.2   30.0  -99.00    0.41

 F indicates top of profile (=1) or below (=0)
 *** AERMOD - VERSION 23132  ***   *** C:\Modeling Projects\7994_Costco\7994_Costco.isc                    ***       01/23/24
 *** AERMET - VERSION  22112 ***   ***                                                                   ***      11:11:12
                                                                                                                  PAGE   4
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  SigA Data

                                     *** THE SUMMARY OF MAXIMUM PERIOD ( 26304 HRS) RESULTS ***


                                    ** CONC OF OTHER    IN MICROGRAMS/M**3                          **

                                                                                                        NETWORK
GROUP ID                        AVERAGE CONC               RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

SRCGP1    1ST HIGHEST VALUE IS    1059.67044 AT (  492271.31,  3607972.33,    16.53,    16.53,    0.00)  DC
          2ND HIGHEST VALUE IS     981.17239 AT (  492262.25,  3607969.34,    16.66,    16.66,    0.00)  DC
```

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          3RD HIGHEST VALUE IS     949.98787 AT (  492280.37,  3607975.32,    16.71,    16.71,    0.00)  DC
          4TH HIGHEST VALUE IS     930.73306 AT (  492265.00,  3607972.00,    16.58,    16.58,    0.00)  DC
          5TH HIGHEST VALUE IS     744.40898 AT (  492253.19,  3607966.35,    16.68,    16.68,    0.00)  DC
          6TH HIGHEST VALUE IS     663.51237 AT (  492278.38,  3607982.01,    16.63,    16.63,    0.00)  DC
          7TH HIGHEST VALUE IS     543.03246 AT (  492244.13,  3607963.36,    16.41,    16.41,    0.00)  DC
          8TH HIGHEST VALUE IS     525.19095 AT (  492335.88,  3607961.05,    17.54,    17.54,    0.00)  DC
          9TH HIGHEST VALUE IS     519.88666 AT (  492339.29,  3607952.02,    17.51,    17.51,    0.00)  DC
         10TH HIGHEST VALUE IS     490.10117 AT (  492276.39,  3607988.70,    16.47,    16.47,    0.00)  DC

STCK1     1ST HIGHEST VALUE IS    1674.56065 AT (  492335.88,  3607961.05,    17.54,    17.54,    0.00)  DC
          2ND HIGHEST VALUE IS    1476.21656 AT (  492332.46,  3607970.08,    17.43,    17.43,    0.00)  DC
          3RD HIGHEST VALUE IS    1308.17682 AT (  492339.29,  3607952.02,    17.51,    17.51,    0.00)  DC
          4TH HIGHEST VALUE IS    1062.94990 AT (  492329.05,  3607979.10,    17.32,    17.32,    0.00)  DC
          5TH HIGHEST VALUE IS    1058.25708 AT (  492345.00,  3607952.00,    17.57,    17.57,    0.00)  DC
          6TH HIGHEST VALUE IS     957.79512 AT (  492345.00,  3607972.00,    17.70,    17.70,    0.00)  DC
          7TH HIGHEST VALUE IS     879.15163 AT (  492342.71,  3607942.99,    17.57,    17.57,    0.00)  DC
          8TH HIGHEST VALUE IS     765.43297 AT (  492325.63,  3607988.13,    17.14,    17.14,    0.00)  DC
          9TH HIGHEST VALUE IS     613.00490 AT (  492333.96,  3607990.48,    17.28,    17.28,    0.00)  DC
         10TH HIGHEST VALUE IS     598.96419 AT (  492346.12,  3607933.97,    17.64,    17.64,    0.00)  DC

ALL       1ST HIGHEST VALUE IS    2199.75161 AT (  492335.88,  3607961.05,    17.54,    17.54,    0.00)  DC
          2ND HIGHEST VALUE IS    1962.01730 AT (  492332.46,  3607970.08,    17.43,    17.43,    0.00)  DC
          3RD HIGHEST VALUE IS    1828.06347 AT (  492339.29,  3607952.02,    17.51,    17.51,    0.00)  DC
          4TH HIGHEST VALUE IS    1544.85075 AT (  492280.37,  3607975.32,    16.71,    16.71,    0.00)  DC
          5TH HIGHEST VALUE IS    1513.56613 AT (  492271.31,  3607972.33,    16.53,    16.53,    0.00)  DC
          6TH HIGHEST VALUE IS    1495.28796 AT (  492345.00,  3607952.00,    17.57,    17.57,    0.00)  DC
          7TH HIGHEST VALUE IS    1476.48955 AT (  492329.05,  3607979.10,    17.32,    17.32,    0.00)  DC
          8TH HIGHEST VALUE IS    1359.96123 AT (  492342.71,  3607942.99,    17.57,    17.57,    0.00)  DC
          9TH HIGHEST VALUE IS    1334.49823 AT (  492262.25,  3607969.34,    16.66,    16.66,    0.00)  DC
         10TH HIGHEST VALUE IS    1306.10181 AT (  492265.00,  3607972.00,    16.58,    16.58,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
```

*** MODELOPTs: RegDFAULT CONC ELEV URBAN SigA Data

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE CONC	DATE (YYMMDDHH)	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
SRCGP1	1ST HIGH VALUE IS 6699.95563	ON 12092102:	AT (492271.31, 3607972.33, 16.53, 16.53, 0.00)	DC	
STCK1	1ST HIGH VALUE IS 14286.87417	ON 12092403:	AT (492332.46, 3607970.08, 17.43, 17.43, 0.00)	DC	
ALL	1ST HIGH VALUE IS 17669.14976	ON 12092403:	AT (492332.46, 3607970.08, 17.43, 17.43, 0.00)	DC	

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV URBAN SigA Data

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)
A Total of 1 Warning Message(s)
A Total of 456 Informational Message(s)

A Total of 26304 Hours Were Processed

A Total of 161 Calm Hours Identified

A Total of   295 Missing Hours Identified (1.12 Percent)

   ******** FATAL ERROR MESSAGES ********
              *** NONE ***

   ********   WARNING MESSAGES   ********
MX W403   116   PFLCNV: Turbulence data is being used w/o ADJ_U* option   SigA Data

Receptor Maps

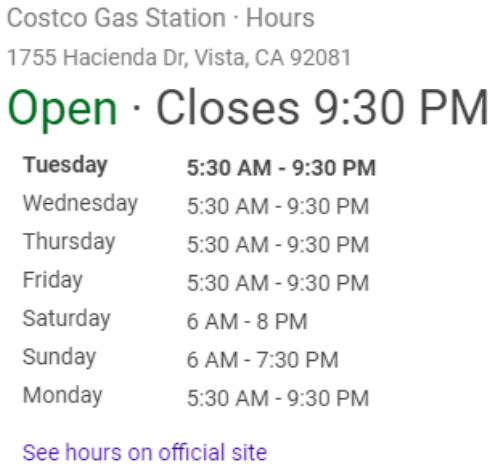
Applicant: Costco Gasoline (Loc. No.781)

Application: APCD2023-APP-007994

Site: APCD2023-SITE-04416

Equipment Address: 1128 Broadway, Chula Vista CA 91911

Operating Schedule for refueling, hose permeation and spillage:	Hours per day	16	Weeks per Year:	52
	Days per Week:	7	Days per Year:	365
Max. Operating Schedule:	Hours per day	24	Weeks per Year:	52
	Days per Week:	7	Days per Year:	365



Proposed throughput: 84,000,000 gallon gasoline per year

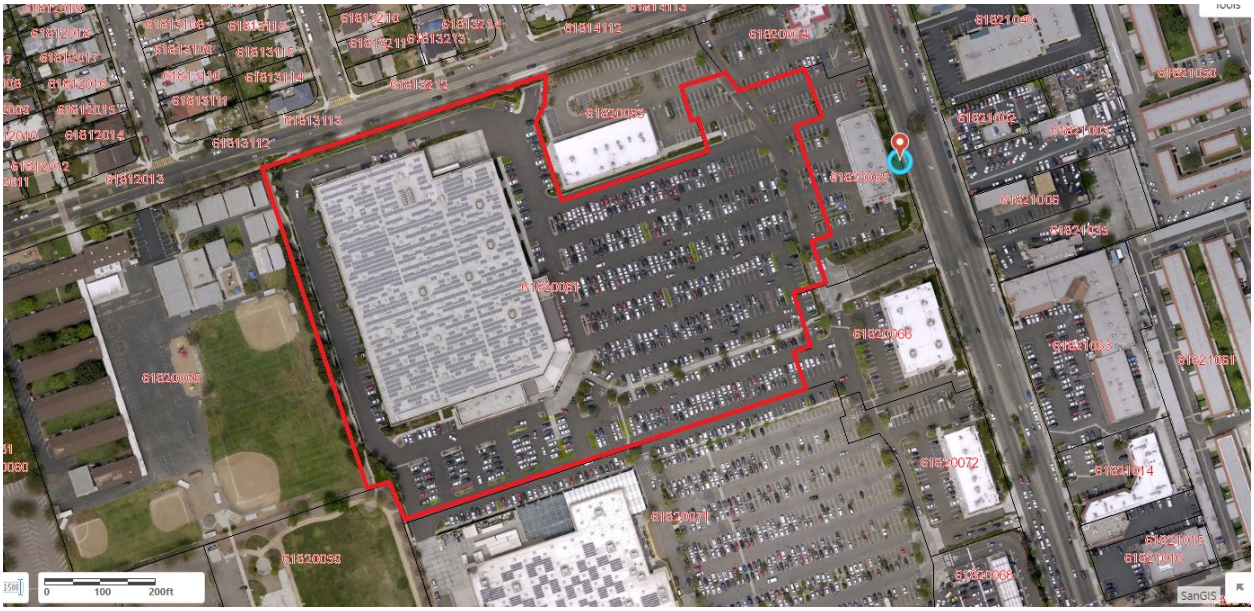
Proposed throughput: 7,000,000 gallon gasoline per month

Gas Station CARB Emission Factors:

Emission Factor	Units	Process	Phase	EF Source	Hour Scalar Notes
0.15	lb/1K gallon	Phase I Bulk Transfer Loss	Vapor	CARB 2013 Updated Emission Factors Table I-I	24
0.024	lb/1K gallon	Pressure Driven Loss (Breathing Loss)	Vapor	CARB 2013 Updated Emission Factors Table I-I	24

0.089	lb/1K gallon	Non-ORVR Vehicles with Phase II fueling	Vapor	CARB 2013 Updated Emission Factors Table I-I	16
0.009	lb/1K gallon	Hose Permeation, low perm hose (2017)	Vapor	CARB 2013 Updated Emission Factors Table I-I	16
0.24	lb/1K gallon	Spillage	Liquid	CARB 2013 Updated Emission Factors Table I-I	16
0.512	Total				

Property Boundary



Nearest School: 685.61 ft to Harborside Elementary School

Non-Point Source #1- Closest Residential 315.05 ft

Point Source #1 – Closest Residential 319.74 ft

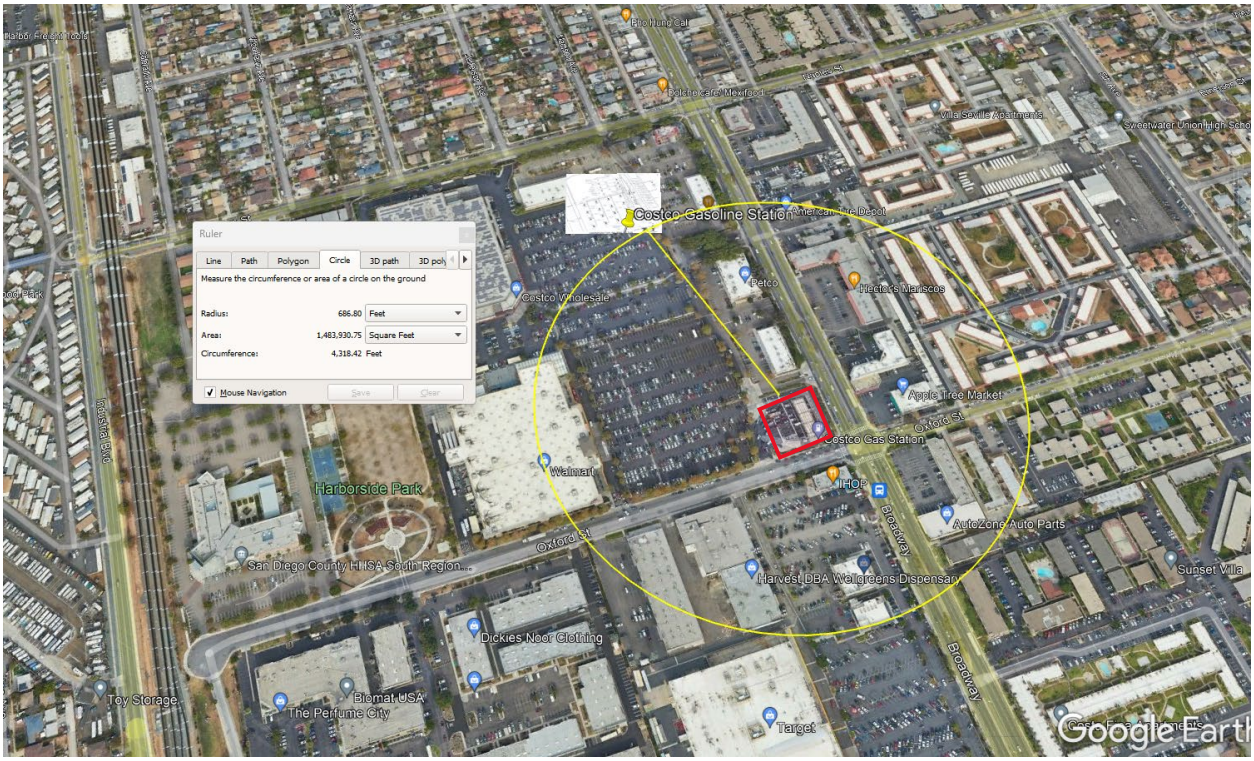
Non-Point Source #1 - Closest Business Operation: 37.07 ft

Point Source #1 – Closest Business Operation: 149.94 ft

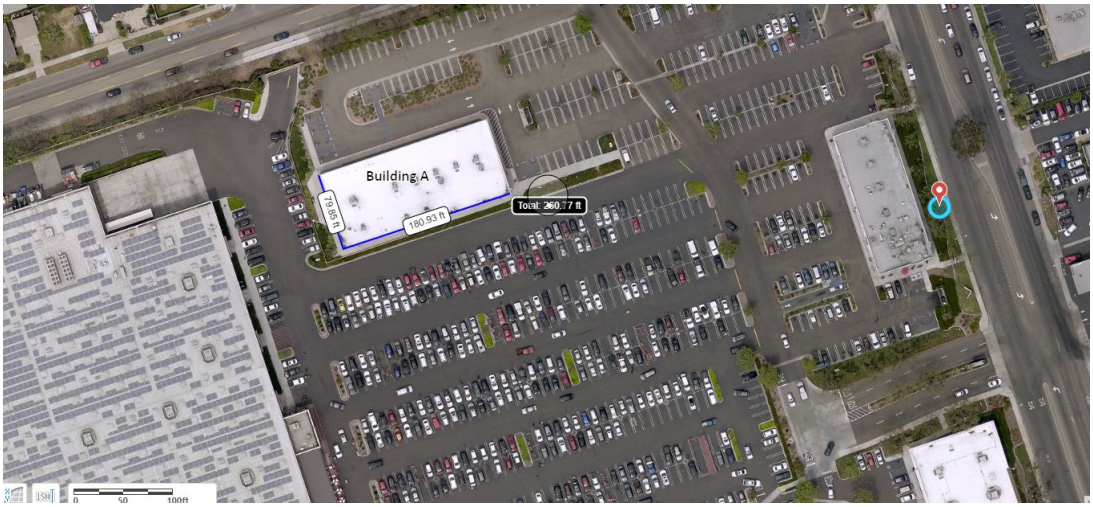
Non-Point Source #1 – Acute receptor: 339.06

Point Source #1 - Acute receptor: 323.98ft

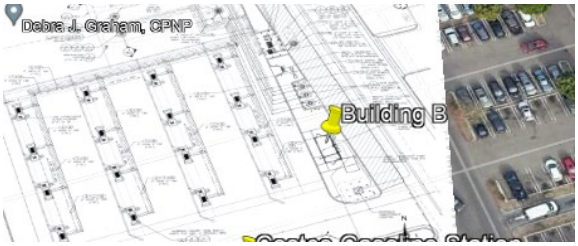
New Costco Gasoline Station (APCD2023-APP-007994) and existing Costco Gasoline Station (APCD2007-PTO-973230), indicated by a red box below, will be demolished once the new gasoline station is in operation.



Building A: 79.85ft x 180.93 ft, assume height = 24 ft for two floors commercial building



Building B: Building Height 9 ft x width 8 ft x Length 17 ft (data obtained from application form)



Height of canopy is 17’6” (from email received on 10-16-2023 for APP-007920)

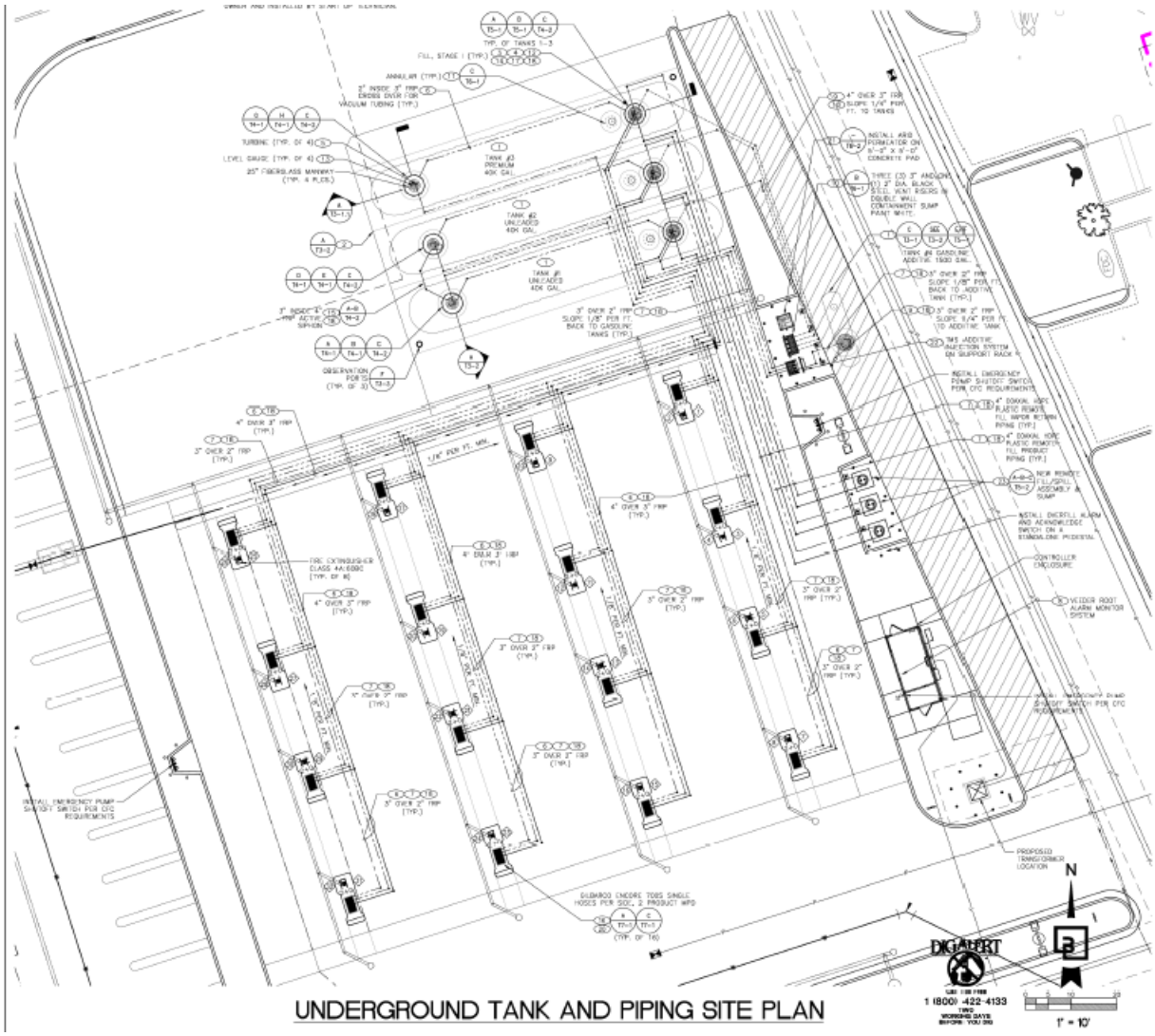
Emission sources: Please refer to the Underground Tank and Piping Site Plan for details.

Red box is the dispensing area, where refueling, hose permeation and spillage occur (non-point source #1).

Blue box is the underground storage tanks.

Green circle is the vent pipes for breathing and loading (point source #1).

Orange is the remote filling area, where VOCs from loading emit through vent pipes (point source #1)



UNDERGROUND TANK AND PIPING SITE PLAN

Galvez, Maria

From: Chan, Karen Yimnei
Sent: Tuesday, January 9, 2024 12:31 PM
To: Reeve, Bill; Nguyen, Tony
Cc: Canter, Adam; DiFulvio, Jaime; Swaney, Jim; Weller, Allison
Subject: Expedited: 7994 Costco Gasoline (Loc. No. 781)
Attachments: APP-007994-Rule1200_genericctoxics_112023.xlsx; APP-007994 -Plot Plan.pdf; APCD2023-APP-007994-receptor maps.docx; APCD2023-APP-007994_VR Emission Calcs.xlsx

Hello Bill,

Here is a HRA request for a new gasoline dispensing facility permit application (APCD2023-APP-007994). I have attached the emission calculations, Rule 1200 calculations and the site and receptor maps for your review.
Could you please have the modeler post the results in 7994_Costco Gasoline (Loc. No. 781))? Please let me know if you have any questions or need additional information. Thank you!

Best regards,

Karen Yimnei Chan
Assistant APCD Engineer
10124 Old Grove Rd,
San Diego, CA 92131
Email: Karen.Chan@sdapcd.org
Phone: (858) 414-9917