From: Christina Acosta [mailto:christinaacosta.ca@gmail.com]
Sent: Tuesday, January 4, 2022 4:27 PM
To: CityClerk <CityClerk@longbeach.gov>
Subject: Item 26

-EXTERNAL-

World Oil Storage Tanks Messaging Guidelines

• Item 26: Appeal of the Board of Harbor Commissioners' adoption of the Final Initial Study/Negative Declaration (IS/ND) for the World Oil Tank Installation Project (Project) January 4, 2022

***

My name is Christina Acosta and I am a member of the California Faculty Association and a resident of Long Beach. I'm here to express my strong opposition to the negative declaration approach (the no impact conclusion) for the World Oil Project. The potentially significant environmental impacts from this project require robust environmental review under an environmental impact report to assess appropriate mitigation and alternatives to this project.

Continued oil storage expansion in our region is out of sync with the rhetoric of the Port and Long Beach Mayor about advancing clean technologies and addressing pollution burdens. The negative declaration for this project ignores the reality on the ground in overburdened communities and the very real harmful impacts of this expansion. The World Oil Project would have a range of harmful impacts on surrounding communities, including:

• Project would add to World Oil's existing oil storage capacity of **502,000 barrels**
• Project would produce **15,000 barrels of hazardous sludge** over its lifetime
• Project would free up to **188,000 barrels of oil storage** for use by nearby refineries
• Project will emit **hundreds of thousands of pounds of toxic air pollution** over its lifetime
• Project would be about **half a mile** from two elementary schools, parks, and neighborhoods

The Long Beach City Council must demonstrate leadership and show their commitment to impacted residents and environmental justice.

• We urge the Council to require the Port to **prepare an environmental impact report** for this project to protect public health and safety and the environment.
• We urge you to stand up to this powerful industry by not allowing storage tank projects to be rubber-stamped without robust environmental review.

Sent from my iPhone

From: Janet Bernabe [mailto:janet.b@ccaej.org]
Sent: Tuesday, January 4, 2022 4:00 PM
To: CityClerk <CityClerk@longbeach.gov>
Subject: Public Comment: Item 26 Appeal

-EXTERNAL-

Good evening, name is Janet Bernabe and I am the Organizing Director for the Center for Community Action and Environmental Justice CCAEJ. I am writing my comment here to express our strong opposition to the negative declaration approach (the no impact conclusion)for the World Oil Project. The potentially significant environmental impacts from
this project require robust environmental review under an environmental impact report to assess appropriate mitigation and alternatives to this project.

> Continued oil storage expansion in our region is out of sync with the rhetoric of the Port and Long Beach Mayor about advancing clean technologies and addressing pollution burdens. The negative declaration for this project ignores the reality on the ground in overburdened communities and the very real harmful impacts of this expansion. The World Oil Project would have a range of harmful impacts on surrounding communities, including:

- Project would add to World Oil's existing oil storage capacity of **502,000 barrels**
- Project would produce **15,000 barrels of hazardous sludge** over its lifetime
- Project would free up to **188,000 barrels of oil storage** for use by nearby refineries
- Project will emit **hundreds of thousands of pounds of toxic air pollution** over its lifetime
- Project would be about **half a mile** from two elementary schools, parks, and neighborhoods

> The Long Beach City Council must demonstrate leadership and show their commitment to impacted residents and environmental justice.

•We urge the Council to require the Port to **prepare an environmental impact report** for this project to protect public health and safety and the environment.
• We urge you to stand up to this powerful industry by not allowing storage tank
projects to be rubber-stamped without robust environmental review.

From: Heriberto Cabrera [mailto:hcabrera33@gmail.com]
Sent: Tuesday, January 4, 2022 9:49 AM
To: CityClerk <CityClerk@longbeach.gov>
Cc: Mayor <Mayor@longbeach.gov>; Council District 1 <District1@longbeach.gov>; Council District 2 <District2@longbeach.gov>; Council District 3 <District3@longbeach.gov>; Council District 4 <District4@longbeach.gov>; Council District 5 <District5@longbeach.gov>; Council District 6 <District6@longbeach.gov>; Council District 7 <District7@longbeach.gov>; district8@longbeasch.com; Council District 9 <District9@longbeach.gov>
Subject: For the January 4 2022 City Consul meeting item 26

-EXTERNAL-

Please see attached letter in support of World Oil tank installation Project

December 28, 2021

Mayor Robert Garcia and City Councilmembers of Long Beach
411 West Ocean Blvd
Long Beach, CA 90802

RE: January 4, 2022 Council Meeting – ITEM #26

Dear Honorable Mayor Garcia and Long Beach City Councilmembers:

My name is Eddie Cabrera and I am the World Oil Transportation South Gate Terminal Manager. I have worked for World Oil since 1997. I started off as a driver, then a dispatcher and I am now the facility manager.

At this facility we make asphalt for use in paving roads and roofing materials.

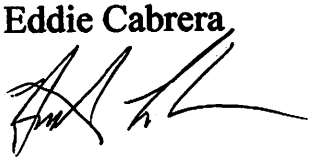
I have lived in Long Beach nearly 30 years.

World Oil has always treated me well and I have enjoyed working at this company for more than 24 years.

I am supportive of my company's efforts to create efficiencies at World Oil Terminal Long Beach.
Please approve the recommendation to adopt the resolution denying the appeals and upholding the Board of Harbor Commissioner's adoption of the Final IS/ND for the Project.

Thank you,

Eddie Cabrera



1345. E 68th. St
Long Beach. CA. 90805

From: anngadfly@aol.com [mailto:anngadfly@aol.com]
Sent: Tuesday, January 18, 2022 12:08 PM
To: Council District 1 <District1@longbeach.gov>; Council District 2 <District2@longbeach.gov>; Council District 3 <District3@longbeach.gov>; Council District 4 <District4@longbeach.gov>; Council District 5 <District5@longbeach.gov>; Council District 6 <District6@longbeach.gov>; Council District 7 <District7@longbeach.gov>; Council District 8 <District8@longbeach.gov>; Council District 9 <District9@longbeach.gov>; Mayor <Mayor@longbeach.gov>; CityClerk <CityClerk@longbeach.gov>; Tom Modica <Tom.Modica@longbeach.gov>; Charles Parkin <Charles.Parkin@longbeach.gov>
Subject: Item 26 World Oil Tank appeal

-EXTERNAL-

Los Cerritos Wetlands Task Force
Angeles Chapter, Sierra Club

- Item 26: Appeal of the Board of Harbor Commissioners' adoption of the Final Initial Study/Negative Declaration (IS/ND) for the World Oil Tank Installation Project (Project) January 4, 2022

Dear Decision Makers:
I urge you to uphold the appeal and demand an Environmental Impact Report/EIR for this major fossil fuel expansion project.
I find it incredible that the Negative Declaration, done by the Port for the Project, does not find that adding 50,000 barrels of marine diesel fuel to the facility would not add pollution to the air and water and affect the health of nearby residents.
To quote Julia May, Senior Scientist, Communities for a Better Environment:
“The Project has clear potential to cause significantly increased hazards, air and water pollution, and cumulative impacts.”
As Dani Ziff, CA Coastal Commission staff writes, there is also no evidence provided in the Negative Declaration that shows these storage tanks will not be a danger in the event of rising sea level and severe storms
How do these new tanks comply with these requirements of the Green Port policy:

- **Air – Reduce harmful air emissions from Port activities.**
- **Water – Improve the quality of Long Beach Harbor waters.**
- **Soils/Sediments – Remove, treat, or render suitable for beneficial reuse contaminated soils and sediments in the Harbor District.**
- **Sustainability – Implement sustainable practices in design and construction, operations, and administrative practices throughout the Port.**

At the very least, the existing tanks should be removed, so there is an actual reduction in the fuel storage amount.

Please protect the health and safety of all those who live and work near this Diesel Death Zone and demand an adequate EIR for this project.

Sincerely,
Ann Cantrell, Co-Chair
Sierra Club Los Cerritos Wetlands Task Force

From: Hugo Castillo [mailto:hcaseli@yahoo.com]
Sent: Tuesday, January 4, 2022 11:52 AM
To: CityClerk <CityClerk@longbeach.gov>
Cc: Mayor <Mayor@longbeach.gov>; Council District 1 <District1@longbeach.gov>; Council District 2 <District2@longbeach.gov>; Council District 3 <District3@longbeach.gov>; Council District 4 <District4@longbeach.gov>; Council District 5 <District5@longbeach.gov>; Council District 6 <District6@longbeach.gov>; Council District 7 <District7@longbeach.gov>; Council District 8 <District8@longbeach.gov>; Council District 9 <District9@longbeach.gov>
Subject: For the January 4, 2022 City Council Meeting – ITEM 26

-EXTERNAL-

Hello,

Please see the attached letter in support of the World Oil Tank Installation Project.

December 28, 2021

Mayor Robert Garcia and City Councilmembers of Long Beach
411 West Ocean Blvd
Long Beach, CA 90802

RE: January 04, 2022 – ITEM #26

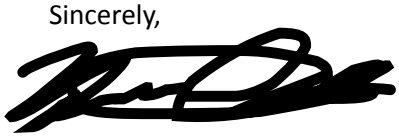
Dear Honorable Mayor Garcia and Long Beach City Councilmembers:

My name is Hugo Castillo and I am a resident of Long Beach.

I have worked for World Oil for almost 2 years and I enjoy my job as an instrument technician. I find that there are new challenges created daily for my own personal growth at the company.

I would like to ask for your support of World Oil efforts at the Long Beach Terminal.
Hope you will deny the appeals.

Sincerely,



Hugo Castillo

From: Chae, David [mailto:David.Chae@keller-na.com]
Sent: Thursday, January 13, 2022 10:37 AM
To: CityClerk <CityClerk@longbeach.gov>; Mayor <Mayor@longbeach.gov>; Council District 1 <District1@longbeach.gov>; Council District 2 <District2@longbeach.gov>; Council District 3 <District3@longbeach.gov>; Council District 4 <District4@longbeach.gov>; Council District 5 <District5@longbeach.gov>; Council District 6 <District6@longbeach.gov>; Council District 7 <District7@longbeach.gov>; Council District 8 <District8@longbeach.gov>; Council District 9 <District9@longbeach.gov>
Subject: RE: Keller - Ribost tank project Long beach support letter.

-EXTERNAL-

Good morning City and Council members,

Please attached revised support letter.
For this project, we plan to have 4 operators from Local 12.

Thank you,

David Chae Assistant Project Manager
Keller – North America
t: +1-909-393-9300

From: Chae, David
Sent: Wednesday, January 12, 2022 1:57 PM
To: CityClerk@longbeach.gov; Mayor@longbeach.gov; District1@longbeach.gov; District2@longbeach.gov; District3@longbeach.gov; District4@longbeach.gov; District5@longbeach.gov; District6@longbeach.gov; district7@longbeach.gov; District8@longbeach.gov; District9@longbeach.gov
Subject: Keller - Ribost tank project Long beach support letter.

To Long Beach City and council members,

Keller has written a support letter for Ribost Tank project in Long beach
This letter refers to item 20 on the January 20, 2022 agenda of the LB City Council meeting.
If you have any questions or comments regarding our work, please feel free to reach out to me.

Best regard,

David Chae Assistant Project Manager
Keller – North America
17461 Derian Avenue Suite 106 Irvine, CA 92614
t: +1-909-393-9300
e: david.chae@keller-na.com

KELLER

keller-na.com | LinkedIn

KELLER

January 13, 2022
Long Beach City Council
Long Beach, CA

Attention: Long Beach City Council
Re: World Oil Long Beach, CA
Reference to: Item 20 on the January 20, 2022 agenda of the LB City Council Meeting.

To whom this may concern,

This letter is written in support of City of Long Beach Projects. Keller North America Inc. referenced herein as "Keller" ensures that we deliver consistently high performance and continuously improve to meet our customer's needs in a safe and productive manner.

Keller is committed to being a diverse and inclusive place to work, reflecting the world in which we operate. With that being said, our workforce is made up of local carpenters, journeymen, and apprentices that belong to Southwest Regional Council of Carpenters, CTLF local 300, and I.U.O.E Local 12. For World Oil Ribost tank project, we plan to have 4 operators from Local 12.

Global strength and local focus are what make us unique. Our knowledge of local markets and ground conditions means we're ideally placed to understand and respond to a particular local engineering challenge. Additionally, this positions us to work with local vendors and local laborers to support the communities in which we work.

City of Long Beach Projects would be beneficial to our company, local employees/residents, and our community. We act responsibly and respectfully towards the communities we work in because we're a part of them.

Thank you and please do not hesitate to contact me if you should have any questions.

Keller North America
Western Region

David Chae,
Assistant Project Manager
805-766-3270

Sunil Arora, PE
Project Executive
805-901-9301

Keller North America, Inc.
17461 Derian Avenue, Suite 106
Irvine, CA 92614

t: 909-393-9300
f: 909-393-0036

THINK SAFE

From: John Dougherty [mailto:jdougherty@worldoilcorp.com]
Sent: Monday, January 17, 2022 8:04 AM
To: CityClerk <CityClerk@longbeach.gov>
Cc: Mayor <Mayor@longbeach.gov>; Council District 1 <District1@longbeach.gov>; Council District 2 <District2@longbeach.gov>; Council District 3 <District3@longbeach.gov>; Council District 4 <District4@longbeach.gov>; Council District 5 <District5@longbeach.gov>; Council District 6 <District6@longbeach.gov>; Council District 7 <District7@longbeach.gov>; Council District 8 <District8@longbeach.gov>; Council District 9 <District9@longbeach.gov>
Subject: For the January 18, 2022 City Council Meeting – ITEM 26

-EXTERNAL-

Please see the attached letter in support of the World Oil Tank Installation Project.
Please see the attached letters that need to be submitted by noon on January 18, 2021.

December 28, 2021

Mayor Robert Garcia and City Councilmembers of Long Beach
411 West Ocean Blvd
Long Beach, CA 90802

RE: January 18, 2022 – ITEM #26

Dear Honorable Mayor Garcia and Long Beach City Councilmembers:

My name is John Dougherty and I write this letter to ask for your support of the World Oil Terminal Long Beach (WOT-LB) project. I am a lifelong resident of the City of Long Beach and serve as the Terminal Operations Manager for WOT-LB. I know that this project will help expand the terminal's ability to manage the commodities at the terminal more efficiently. This project will help strengthen the existing infrastructure for our work.

As I mentioned, I have been a resident of Long Beach for many years. My father was employed at the Long Beach Naval Shipyard, where I also worked early in my career. I attended elementary school at Longfellow, Jr. High at Hughes, and High School at Jordan, along with 3 of my older siblings. I met my wife, Nancy in Jr High. We love the Long Beach community and the options it brings for shopping, schools, dining, public services, employment, and general wellbeing. We are happy that our children were born in this community, and we have raised them in this wonderful City. Few residents have the opportunity to both live and work in the same City.

I've worked at World Oil for 30 years. I started working for the company as a contractor. However, once my projects were completed, I was given the opportunity to come onboard as a maintenance mechanic and I have worked for WOT-LB ever since. This company recognizes hard work and dedication of its employees and promotes from within to help make the company stronger and smarter.

I've enjoyed the job stability, good employee benefits, fair management, and great teammates. WOT-LB works hard to allow employees to provide a cooperative working environment and allow its employees to express their concerns. It is always seeking ways to improve their operations and the work environment for its employees.

For all these reasons, I ask for your support of this important project. Please deny the appeal and support the Port of Long Beach Harbor Commissioners approval of the Final IS/Negative Declaration.

Sincerely,

John Dougherty

From: Erin Gardner [mailto:erin@futureports.org]
Sent: Monday, January 3, 2022 3:02 PM
To: CityClerk <CityClerk@longbeach.gov>
Cc: Mayor <Mayor@longbeach.gov>; Council District 1 <District1@longbeach.gov>; Council District 2 <District2@longbeach.gov>; Council District 3 <District3@longbeach.gov>; Council District 4 <District4@longbeach.gov>; Council District 5 <District5@longbeach.gov>; Council District 6 <District6@longbeach.gov>; Council District 7 <District7@longbeach.gov>; Council District 8 <District8@longbeach.gov>; Council District 9 <District9@longbeach.gov>
Subject: Letter of Support for World Oil: January 2, 2022 Hearing Item #26

-EXTERNAL-

Hello,

Please see our attached letter of support of item #26 to deny the appeals and uphold the unanimous vote of the Harbor Commissioners approval of the World Oil Project and to adopt the Final IS/Neg Declaration.

Thank you,
Erin

--
Erin Gardner
Operations Manager
FuturePorts
310-982-1323 office | 714-501-9416 mobile
erin@futureports.org | www.futureports.org

FUTUREPORTS

PO Box 15624
Long Beach CA 90815
office: 310.982.1323
email: info@futureports.org
www.futureports.org

January 3, 2021

Mayor Robert Garcia
411 West Ocean Blvd, 11th Floor
Long Beach, California 90802

Councilmember Stacy Mungo
411 West Ocean Blvd, 11th Floor
Long Beach, California 90802

Councilmember Mary Zendejas
411 West Ocean Blvd, 11th Floor
Long Beach, California 90802

Councilmember Dr. Suely Saro
411 West Ocean Blvd, 11th Floor
Long Beach, California 90802

Councilmember Cindy Allen
411 West Ocean Blvd, 11th Floor
Long Beach, California 90802

Councilmember Roberto Uranga
411 West Ocean Blvd, 11th Floor
Long Beach, California 90802

Councilmember Suzie Price
411 West Ocean Blvd, 11th Floor
Long Beach, California 90802

Councilmember Al Austin II
411 West Ocean Blvd, 11th Floor
Long Beach, California 90802

Councilmember Daryl Supernaw
411 West Ocean Blvd, 11th Floor
Long Beach, California 90802

Vice Mayor Rex Richardson
411 West Ocean Blvd, 11th Floor
Long Beach, California 90802

Re: World Oil Tank Installation Project January 4, 2022 Hearing Item #26

Dear Mayor Garcia and Long Beach Councilmembers,

On behalf of FuturePorts I am writing to you to express our support for the World Oil RIBOST Tank Installation Project IS/ND.

FuturePorts is a 501(c)(6) nonprofit advocacy coalition founded in 2005 to help coalesce the Southern California supply chain around the need to both grow the ports and to address the environmental, air quality, and quality of life issues that come with that growth. FuturePorts believes that a vibrant and healthy economic and environmental future for the ports is vital to us all.

World Oil is a very innovative company, recycling many products including motor oil and antifreeze. With the addition of the two smaller tanks, the RIBOST Terminal Project will be able to provide surge capacity for blending and storage of marine fuels to meet cleaner IMO 2020 standards, which will directly benefit Port tenants who use these fuels.

FUTUREPORTS

PO Box 15624
Long Beach CA 90815
office: 310.982.1323
email: info@futureports.org
www.futureports.org

The project will also benefit the local economy, maintaining existing jobs at the terminal as well as create many new, good-paying ones during construction.

The new tankage at the RIBOST Terminal will also increase the efficiency of the terminal, its customers, and the Port of Long Beach.

For these reasons and more, FuturePorts is proud to support World Oil in their tank installation project.

Thank you,

Marnie Primmer
Executive Director
FuturePorts

From: Gil Ong [mailto:gilong314@gmail.com]
Sent: Tuesday, January 18, 2022 12:31 PM
To: CityClerk <CityClerk@longbeach.gov>
Subject: Comment on World Oil Project

-EXTERNAL-

Hello my name is Gil Antonio Ong, member of East Yard Communities for Environmental Justice. I want to voice out my opposition and concern for the World Oil Project.The Project will produce 15,000 barrels of hazardous sludge over its lifetime and emit hundreds of thousands of pounds of toxic air pollution. Not to mention that the project is half a mile from two elementary schools, parks and neighborhoods. What is good for the environment is good for the people and the economy, please see the error hastily approving this project.

I urge the Council to require the Port to prepare an environmental impact report for this project to protect our health and safety. Lastly, I hope you have the courage to stand up to this powerful industry by not allowing new oil infrastructure projects to be rubber-stamped without meaningful environmental review.

From: Alisha C. Pember [mailto:apember@adamsbroadwell.com]
Sent: Tuesday, January 4, 2022 3:42 PM
To: Council District 1 <District1@longbeach.gov>; Council District 2 <District2@longbeach.gov>; Council District 3 <District3@longbeach.gov>; Council District 4 <District4@longbeach.gov>; Council District 5 <District5@longbeach.gov>; Council District 6 <District6@longbeach.gov>; Council District 7 <District7@longbeach.gov>; Council District 8 <District8@longbeach.gov>; Council District 9 <District9@longbeach.gov>; CityClerk <CityClerk@longbeach.gov>; Pablo Rubio <Pablo.Rubio@longbeach.gov>
Cc: Christina Caro <ccaro@adamsbroadwell.com>; Kelilah D. Federman <kfederman@adamsbroadwell.com>
Subject: Agenda Item No. 26: Appeal of the World Oil Tank Installation Project (SCH No. 2020100119, File No. 22-0026)

-EXTERNAL-

Good afternoon,

Please see the attached **Comments re Agenda Item No. 26: Appeal of the World Oil Tank Installation Project (SCH No. 2020100119, File No. 22-0026)** and **Exhibit A**.

We are also providing a Dropbox link containing supporting references: https://www.dropbox.com/sh/va5gfqgsmcttg6x/AAB0wUOjm2Daj0mM90asCpnya?dl=0.

A hard copy of our Comments and Exhibit A will be provided at this evening's hearing.

If you have any questions, please contact Kelilah Federman.

Thank you.

Alisha Pember

Alisha C. Pember
Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080
(650) 589-1660 voice, Ext. 24
apember@adamsbroadwell.com

ADAMS BROADWELL JOSEPH & CARDOZO
A PROFESSIONAL CORPORATION
ATTORNEYS AT LAW
601 GATEWAY BOULEVARD, SUITE 1000
SOUTH SAN FRANCISCO, CA 94080-7037
TEL: (650) 589-1660
FAX: (650) 589-5062
kfederman@adamsbroadwell.com

SACRAMENTO OFFICE
520 CAPITOL MALL, SUITE 350
SACRAMENTO, CA 95814-4721
TEL: (916) 444-6201
FAX: (916) 444-6209

KEVIN T. CARMICHAEL
CHRISTINA M. CARO
JAVIER J. CASTRO
THOMAS A. ENSLOW
KELILAH D. FEDERMAN
ANDREW J. GRAF
TANYA A. GULESSERIAN
KENDRA D. HARTMANN*
DARIEN K. KEY
RACHAEL E. KOSS
AIDAN P. MARSHALL
TARA C. RENGIFO

Of Counsel
MARC D. JOSEPH
DANIEL L. CARDOZO

*Not admitted in California.
Licensed in Colorado.*

January 4, 2022

Via Email and Hand Delivery

Mayor Robert Garcia; Councilmembers Mary Zendejas; Cindy Allen; Suzie Price; Daryl Supernaw; Stacy Mungo; Suely Saro; Roberto Uranga; Al Austin II; Rex Richardson
Civic Chamber, City Hall
411 West Ocean Boulevard
Long Beach, CA 90802
Email: district1@longbeach.gov; district2@longbeach.gov; district3@longbeach.gov; district4@longbeach.gov; district5@longbeach.gov; district6@longbeach.gov; district7@longbeach.gov; district8@longbeach.gov; district9@longbeach.gov

Monique De La Garza, City Clerk
Email: cityclerk@longbeach.gov

Pablo Rubio, Sr. City Clerk Analyst
Email: Pablo.Rubio@longbeach.gov

Re: Agenda Item No. 26: Appeal of the World Oil Tank Installation Project (SCH No. 2020100119, File No. 22-0026)

Dear Mayor Garcia, Councilmembers Zendejas, Allen, Price, Supernaw, Mungo, Saro, Uranga, Austin, Richardson, Ms. De La Garza and Mr. Rubio:

On behalf of Appellant Safe Fuel and Energy Resources California ("SAFER CA") and Long Beach residents Nicholas Garcia, Sopha Sum, and Sophall Sum, we submit these comments in response to the Port's Report on the Appeal of the Adoption of the Initial Study/Negative Declaration for the World Oil Tank Installation Project ("Staff Report") for tonight's hearing on SAFER CA's Appeal of the Board of Harbor Commissioner's October 28, 2021 decision to approve the Harbor Development Permit (No. 19-066) and approval of the Final Initial Study/Negative Declaration ("IS/ND") for the World Oil Tank Installation Project ("Project"), proposed by Ribost Terminal, LLC dba World Oil Terminals

("Applicant").[1] The Project seeks to construct two new 25,000-barrel petroleum storage tanks at the existing World Oil Terminal owned by Applicant located at the Port.[2] The terminal is 261,000 square feet (about 6 acres) and contains seven existing petroleum tanks of various sizes totaling a capacity of 502,000 barrels.[3] The two tanks would provide additional storage capacity of petroleum for refining and distribution and would make two of its existing larger tanks available for lease by third-party vendors.[4] The IS/ND estimates a 10 percent increase in truck trips, as well as an increase in average barrel throughput of fuel oil, but not of crude oil, over existing operations at the facility.[5]

The Staff Report fails to respond to or resolve the major issues raised in SAFER CA comments submitted on November 20, 2020 and October 28, 2021. SAFER CA's comments and Appeal demonstrate substantial evidence that supports a fair argument that the Project may result in potentially significant environmental impacts. SAFER CA and our technical consultant, emissions and air quality expert Dr. Phyllis Fox demonstrated that there is substantial evidence supporting a fair argument that the Project's operational air quality emissions are significant and unmitigated and the Port lacks substantial evidence to support the no-impact conclusions in the IS/ND. The Project may also result in potentially significant construction NOx emissions, that the IS/ND fails to adequately analyze or mitigate. The Project may result in cumulatively significant air quality and greenhouse gas emissions that remain unmitigated. The Port failed to address the fact that the Project will exacerbate sea level rise, and may place Project structures in the path of future sea level rise at the Port. Based on the substantial evidence presented in our comments and addressed herein, the Council should uphold SAFER CA's Appeal.

SAFER CA respectfully requests that the City Council vote to grant this Appeal and overturn the Board of Harbor Commissioner's erroneous approval of the HDP and IS/ND and direct the Harbor Commission to set aside the Project approval and conduct the appropriate CEQA analysis in the form of an environmental impact report ("EIR") as required by CEQA, before reconsidering the Project.

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[1] IS/ND, p. 2-1.
[2] IS/ND, p. 2-1.
[3] IS/ND, p. 1-1.
[4] IS/ND, p. 2-4.
[5] IS/ND, p. 2-6.

I. STATEMENT OF INTEREST

SAFER CA advocates for safe processes at California refineries and fuel transport and distribution facilities to protect the health, safety, standard of life and economic interests of its members. SAFER CA supports sustainable development of fuel resources in California that complies with environmental and public health laws. Its members have an interest in enforcing environmental laws, such as CEQA, which require the disclosure of potential environmental impacts of, and ensure safe operations and processes for, California's fuel production, storage, and transport projects. SAFER CA members are concerned about projects, like this one, that present serious environmental risks and public service infrastructure demands without providing countervailing employment and economic benefits to local workers and communities. SAFER CA filed this Appeal to ensure that the City fully complies with its obligations under State and local environmental and public health laws before approving the Project.

SAFER CA members live, work, recreate and raise their families in Los Angeles County, including the City of Long Beach. Accordingly, they would be directly affected by the Project's adverse environmental impacts. The members of SAFER CA's participating unions may also work on the Project itself. They will, therefore, be first in line to be exposed to any hazardous materials, air contaminants, and other health and safety hazards, that exist onsite.

II. SUBSTANTIAL EVIDENCE SUPPORTS A FAIR ARGUMENT THAT THE PROJECT WILL RESULT IN SIGNIFICANT ENVIRONMENTAL IMPACTS THAT THE IS/ND FAILS TO DISCLOSE OR MITIGATE

The Staff Report erroneously concluded that "SAFER CA has not presented a fair argument that there is substantial evidence that the Project will result in a significant environmental impact."[6] SAFER CA submitted extensive comments, along with our technical consultant, emissions and air quality expert Dr. Phyllis Fox, on the Draft IS/ND on November 20, 2020 and again ahead of the October 28, 2021 Board of Harbor Commissioners hearing. Those comments and our Appeal letter provided the Port with substantial evidence supporting a fair argument that the Project may result in potentially significant environmental impacts, including

[6] Staff Report, p. 5 of 11.

potentially significant and unmitigated emissions of volatile organic compounds ("VOCs") and greenhouse gases (GHGs").

The IS/ND, therefore, is inappropriate and an EIR must be prepared,[7] even if other substantial evidence supports an opposite conclusion.[8] Dr. Fox's comments provide an abundance of substantial evidence, found in both Exhibits A and B attached to SAFER CA's Appeal, supporting a fair argument that the Project will have significant, unmitigated air quality impacts from construction, operation, fugitive sources, and increased facility capacity, all of which the Port failed to disclose and mitigate, in violation of CEQA. In addition, the IS/ND itself provides substantial evidence of significant air quality impacts from Project VOC emissions, which by the Port's own admission will exceed SCAQMD's offset threshold for its New Source Review Rule,[9] triggering the Air District's offset requirement. Neither the Final IS/ND nor the Staff Report resolve these issues.

A. Dr. Fox's Opinion is Substantial Evidence

The SAFER CA Appeal and comments provide substantial evidence supporting a fair argument that the Project may have potentially significant effects on the environment such that an EIR must be prepared. CEQA Guidelines Section 15384(a) defines substantial evidence as "enough relevant information and reasonable inferences from this information that a fair argument can be made to support a conclusion, even though other conclusions might be reached."[10] Substantial evidence includes "facts, reasonable assumptions predicated upon facts, and expert opinion supported by facts."[11]

SAFER CA's consultant, Dr. Fox, is a highly qualified air quality and hazardous materials expert whose opinions have been upheld by the Supreme Court and the Courts of Appeal, including on issues related to refinery and fuel storage and transport emissions.[12] Dr. Fox provided qualified expert opinion supported by

[7] CEQA Guidelines § 15064 subd. (f), (h).
[8] *See No Oil, Inc. v. City of Los Angeles* (1974) 13 Cal.3d 68, 75.
[9] "The facility's existing potential to emit is above the SCAQMD New Source Review Rule VOC offset threshold of 4 tons per year; therefore, the new tank emissions were required to be offset." Draft IS/ND, p. 4-9.
[10] CEQA Guidelines § 15384 subd. (a).
[11] *Id.* at § 15384 subd. (b).
[12] See Exhibit A, P. Fox Curriculum vitae; *Commty. for a Better Env't v. SCAQMD* (2010) 47 Cal.App.5th 588 (upholding Dr. Fox's opinion regarding refinery emissions); *Comtys. for a Better*

facts demonstrating that the Project has potentially significant, unmitigated construction and operational emissions, and that the IS/ND substantially underestimated those impacts.

The Staff Report does not dispute Dr. Fox's qualifications, but contends that Dr. Fox's conclusions about the Project's significant air quality impacts are not based on substantial evidence because the studies she relied on to document the Project's underestimated tank VOC emissions have not been approved by regulatory agencies. In particular, the Staff Report asserts that the "FluxSense Study, industry journal articles or news articles that have not been vetted or approved by any regulatory agency, such as the South Coast Air Quality Management District (SCAQMD), and are not suited for emissions estimation or CEQA significance thresholds; nor are they approved for permitting or regulatory purposes."[13] At other points, the Staff Report asserts that "SAFER CA's referenced demonstration studies and industry journal articles referred to as 'substantial evidence' have not been vetted or approved by any regulatory agency for use in estimating potential future emissions from storage tanks or discreet fugitive sources, such as new petroleum tanks, or for establishing thresholds of significance in CEQA analyses."[14] These assertions are not based in law or fact.

The Staff Report relies on an illusory legal standard that is not supported by caselaw or CEQA. CEQA does not require the facts that experts rely on to be vetted or approved by regulatory agencies. CEQA provides that substantial evidence shall include expert opinion "supported by facts."[15] Whether the evidence relied upon by an expert has an adequate factual foundation can be established through a variety of factors, including the witness' personal knowledge of facts,[16] whether the

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Env't v. City of Richmond (2010) 184 Cal.App.4th 70, 90 fn.7 (acknowledging Dr. Fox as "consulting engineer and refinery expert" and crediting her opinion regarding the lack of support for GHG emissions calculations); *Berkeley Jets*, 91 Cal.App.4th at 1367–1371 (explaining that Dr. Fox's health risk assessment "should have alerted the Port" to a need to analyze TACs related to the project).

[13] Staff Report, Attachment 8 Detailed Response of Harbor Department to the Issues Raised by Safe Fuel and Energy Resources CA, p. 5 of 11, pdf pp. 7, 107.

[15] CEQA Guidelines § 15384 subd. (b).

[15] CEQA Guidelines § 15384 subd. (b).

[16] See *Protect Niles v City of Fremont* (2018) 25 CA5th 1 129; Clews Lan4 & Livestock v City of San Diego (2017) 19 CA5th 161, 195; *Keep Our Mountains Quiet v County of Santa Clara* (2015) 236 CA4tfi 714, 730; *Lucas Valley Homeowners*
Ass'n v County of Marin (1991) 233 CA3d 130, 142; *Oro Fino Gold Mining Corp. v. County of El Dorado* (1990) 225 CA3d 872.

evidence is provided by a qualified expert,[17] whether the evidence is credible,[18] and whether the evidence relies on verifiable data.[19] Opinion evidence submitted by a qualified expert, showing that significant impacts may occur, is usually conclusive as to that impact.[20]

Dr. Fox's expert opinion is supported by fact and easily meets these standards. Dr. Fox's comments on the Project are based on her decades of experience as an engineer, air quality and hazardous materials expert with extensive experience in the field of oil storage, handling and processing. Dr. Fox's qualifications are detailed in Exhibit A to SAFER CA's comments filed on November 5, 2021.[21] Dr. Fox has "over 40 years of experience in the field of environmental engineering, including air emissions and air pollution control; greenhouse gas (GHG) emission inventory and control; water quality and water supply investigations; hazardous waste investigations; hazard investigations; risk of upset modeling; environmental permitting; nuisance investigations (odor, noise); health risk assessments; EIRs; and litigation support."[22] Dr. Fox has reviewed and commented on hundreds of CEQA documents and air permit applications, including for tank farms, refineries, and other industrial facilities. Dr. Fox has MS and PhD degrees in environmental engineering from the University of California at Berkeley. Dr. Fox's expert opinions have been cited by the Court of Appeal and the California Supreme Court.[23]

The evidence relied upon and calculated by Dr. Fox has equal foundation. She reviewed, evaluated, and in some cases remodeled the Project's emissions using modern industry standard emissions software. Dr. Fox's expert comments are based on the data in the record, as well as 35 independent field monitoring studies,

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[17] *Sierra Club v. Department of Forestry & Fire Protection* (2007) 150 CA4th 370; *Architectural Heritage Ass 'n v County of Monterey* (2004) 122 CA4th 1095, 1117.

[18] *Lucas Valley Homeowners Ass'n,* 233 CA3d at 142.

[19] *Id.* at 157.

[20] See *City of Livermore v LAFCO* (1986) 184.CA3d 531, 541.

[21] Letter from Safe Fuel and Energy Resources California ("SAFER CA"), Appeal of Approval of World Oil Tank Installation Project and Initial Study/Negative Declaration (SCH:2020100119) to Mayor Robert Garcia, Long Beach City Council, Monique De La Garza, Port of Long Beach, Exhibit A.

[22] Fox Comments, p. 3.

[23] Dr. Fox's expert opinions have been cited by the courts in *Berkeley Keep Jets Over the Bay Committee v. Board of Port Com'rs* (2001) 91 Cal.App.4th 1344, 1364 and *Communities for a Better Environment v. South Coast Air Quality Management Dist.* (2010) 48 Cal.4th 310, 317.

including a study conducted by SCAQMD itself.[24] Contrary to the contentions in the Staff Report, as Dr. Fox explains in her attached comments, every study she relies on has been vetted and approved by regulatory agencies, including the South Coast Air Quality Management District ("SCAQMD"), the U. S. EPA, the European Union ("EU"), and others, including for use in monitoring VOC emissions from fugitive components, which are present on tanks and the connecting pipeline.[25] Though it is not required for these methods to be vetted by a regulatory agency, they were. Dr. Fox explains that the methods used in the 35 studies [Dr. Fox cites] demonstrating that the IS/ND's tank VOC emissions are underestimated have been vetted and approved by all relevant regulatory agencies.[26] She states that "these methods have been validated by EPA for use in monitoring VOC emissions from fugitive components, which are present on tanks and are used by the California Air Resources Board (CARB) to verify emission inventories."[27] In particular, Dr. Fox relied on remote sensing methods to evaluate the Project's emissions that have been validated by numerous regulatory agencies and are used to determine compliance with emission limits.[28] Dr. Fox reiterates in her comments that the use of remote sensing methods used in the studies to detect leaks from fugitive components, including tanks such as those in the proposed Project, has been thoroughly vetted and approved by regulatory agencies in California, by the U.S. EPA, and by the United Nations, and is regularly used in place of the demonstrably inaccurate TANKS modeling software used by the Port.

The Staff Report wages a similar unsupported attack on Dr. Fox to the one that failed in *Save the Agoura Cornell Knoll v. City of Agoura Hills*.[29] There, the Appellant challenged the evidentiary value of the comments made by Dr. King, an expert in Native American archaeology and history. The court determined that Dr. King was, in fact, an expert, based on Dr. King's letter detailing his qualifications.[30] The court held that "he had an adequate background and knowledge base to support his opinion about the significant effects of the project on the site's cultural resources."[31] Further, the court cited *Pocket Protectors v. City of Sacramento* that "expert opinion if supported by facts, even if not based on specific observations as to

[24] Fox Comments, p. 2.
[25] See Exhibit A, pp 3-10.
[26] *Id.* at 3.
[27] *Id.*
[28] Fox Comments, p. 3.
[29] (2020) 46 Cal.App.5th 665, 689.
[30] *Id.*
[31] *Id.*

the site under review may qualify as substantial evidence supporting a fair argument."[32] Here, Dr. Fox has an adequate background and knowledge base to support her opinions about the significant effects of the Project on the environment, and relied on evidence generated by and vetted by the same regulatory agencies that have jurisdiction over the Project. The agency would be within its right to disregard comments from experts that amounted to "irrelevant generalization, too vague and nonspecific to amount to substantial evidence of anything."[33] But, Dr. Fox presented a specific, factual basis for her reliance on the above mentioned 35 studies and reports to show that the Project may result in potentially significant effect on the environment.

This circumstance is distinct from that addressed in *Parker Shattuck Neighbors v. Berkeley City Council* (2013) 222 Cal.App.4th 768. There, the court determined that the expert opinion was "insufficient to create a fair argument of a significant effect on the environment because a suggestion to investigate further is not evidence, much less substantial evidence, of an adverse impact."[34] Here, Dr. Fox, presented more than a suggestion to investigate Project impacts further, but presented facts demonstrating potentially significant environmental impacts associated with Project construction and operation using the facts in the record. Specifically, Dr. Fox provided substantial evidence demonstrating that tank VOC emissions are significant and unmitigated, NOx emissions are significant and unmitigated, operational hazardous air pollutants from tanks will result in a significant cancer risk, and detailed additional significant impacts as discussed herein and in SAFER CA's prior comments and Appeal.[35]

When qualified experts present conflicting evidence on the nature or extent of a project's impacts, the agency must accept the evidence tending to show the impacts to be significant and prepare an EIR.[36] When "expert opinions clash, an EIR should be done."[37] "It is the function of an EIR, not a negative declaration, to

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[32] *Save the Agoura Cornell Knoll* (2020) 46 Cal.App.5th 665, 689, quoting *Pocket Protectors v. City of Sacramento* (2004) 124 Cal.App.4th 903, 928.
[33] *Lucas Valley Homeowners Assn. v. County of Marin* (1991) 233 Cal.App.3d 130, 157.
[34] *Shattuck Neighbors v. Berkeley City Council* (2013) 222 Cal.App.4th 768, 786.
[35] Fox Comments, p. 1.
[36] *Pocket Protectors v. City of Sacramento* (2004) 124 Cal.App.4th 903, 935; *Sierra Club v. County of Sonoma* (1992) 6 Cal.App.4th 1307, 1317–1318; CEQA Guidelines § 15064(f)(5). See *Rominger v. County of Colusa* (2014) 229 Cal.App.4th 690; *City of Carmel-by-the-Sea v. Board of Supervisors* (1986) 183 Cal.App.3d 229, 249.
[37] *Pocket Protectors*, 124 Cal.App.4th at 928; *Sierra Club*, 6 Cal.App.4th at 1317–1318.

resolve conflicting claims, based on substantial evidence, as to the environmental effects of a project."[38] Where substantial evidence is presented, "evidence to the contrary is not sufficient to support a decision to dispense with preparation of an EIR and adopt a negative declaration, because it could be 'fairly argued' that the project might have a significant environmental impact."[39]

The Port's attempt to discredit Dr. Fox's evidence is a specious attempt to avoid the inevitable result under CEQA – when expert opinions clash, and EIR must be prepared.[40]

B. Substantial Evidence Supports a Fair Argument that the Project May Result in Potentially Significant Air Quality Impacts

Substantial evidence supports a fair argument that the Project may result in potentially significant impacts. The IS/ND, therefore, is inappropriate and an EIR must be prepared,[41] even if other substantial evidence supports the opposite conclusion.[42]

Here, the IS/ND itself provides substantial evidence of significant air quality impacts from Project VOC emissions, which by the Port's own admission will exceed SCAQMD's offset threshold for its New Source Review Rule,[43] triggering the Air District's offset requirement. Further, Dr. Fox's comments identified three sources of tank emissions that were not analyzed in the IS/ND including: 1) roof landing emissions; 2) degassing emissions; and 3) cleaning emissions. These represent major sources of tank VOC emissions.[44] Dr. Fox concludes that when these emissions occur, they are likely to exceed the allowable SCAQMD VOC emissions thresholds.[45] Dr. Fox's comments provide substantial evidence supporting a fair argument that the Project will have significant, unmitigated air quality impacts from emissions of construction, operation, fugitive sources, and increased facility capacity, all of which

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[38] *Pocket Protectors*, 124 Cal.App.4th at 935.
[39] *Sundstrom*, 202 Cal.App.3d at 310 (citation omitted).
[40] *Pocket Protectors*, 124 Cal.App.4th at 928; *Sierra Club*, 6 Cal.App.4th at 1317–1318.
[41] CEQA Guidelines § 15064 subd. (f), (h).
[42] *See No Oil, Inc. v. City of Los Angeles* (1974) 13 Cal.3d 68, 75.
[43] "The facility's existing potential to emit is above the SCAQMD New Source Review Rule VOC offset threshold of 4 tons per year; therefore, the new tank emissions were required to be offset." Draft IS/ND, p. 4-9.
[44] Fox Comments, p. 8.
[45] *Id.*

the Port failed to disclose and mitigate, in violation of CEQA. These impacts must be fully disclosed and mitigated in an EIR.

The Port lacks substantial evidence to support the no-impact conclusions in the IS/ND. As SAFER CA's Appeal and prior comments laid out, the IS/ND is legally inadequate as it failed to provide substantial evidence to support its findings of no significant air quality, public health, and other impacts, as discussed in our comments. Additionally, the Port used flawed methodology in its analyses, resulting in underestimated impacts and unsupported conclusions, including the unsupported conclusion that the Project will have no significant impacts and requires no mitigation. Its conclusions, for example, that operational emissions are insignificant, omit any of the calculations or criteria supporting its conclusions—reviewers are left to accept, categorically and without question, the agency's conclusory and unsupported statements. An agency cannot conclude that an impact is less than significant unless it produces rigorous analysis and concrete substantial evidence justifying the finding.[46] The omission of information required by CEQA is a failure to proceed in the manner required by law.[47] SAFER CA and our air quality expert consultant Dr. Fox presented the City with substantial evidence supporting a fair argument that the Project will have a potentially significant air quality and public health impacts.

The IS/ND contains several more violations, as outlined in our comment letters, demonstrating that the Port improperly relied on mitigation measures disguised as design features in an effort to make impacts appear less significant than they are. The IS/ND provides that "Special Condition AQ-1 is not identified as a CEQA mitigation measure, and its implementation has not been assumed to determine the construction emissions significance findings."[48] However, the Port concluded that construction emissions would be less than significant based on CalEEMod modeling that assumes the use of Tier Final 4 engines, the most stringent low-emission construction equipment available, without a binding commitment to use this equipment for the Project and without disclosing how high emissions would be if less efficient equipment is used.[49]

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[46] *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 732.
[47] *Sierra Club v. State Bd. Of Forestry* (1994) 7 Cal.4th 1215, 1236.
[48] IS/ND, p. 4-10.
[49] Pages 1 and 13 of the document "20180914_RIBOST_CalEEMod_ALL_ATT 1.PDF" provided to us by the Port in response to our records requests state that the Port requires Tier 4 engines for off-road equipment, but the CalEEMod Air Quality Analysis in Appendix A of the IS/ND contains no such language.

California law does not currently require construction fleets to contain exclusively Tier 4 (or even Tier 3) equipment, and allows the phasing-in of higher tiered equipment over a number of years.[50] Without a binding mitigation measure obligating the Applicant to use exclusively Tier 4 engines for the Project, there is no assurance that the Project will utilize this equipment, and no supporting evidence in the record to support the IS/ND's assertion that construction emissions would be less than significant. As a result, the IS/ND does not disclose the full extent of construction emissions, in violation of CEQA.

Special Condition AQ-1 acts in place of mitigation, but is not defined as mitigation by the IS/ND. CEQA defines mitigation to include "[m]inimizing impacts by limiting the degree or magnitude of the action and its implementation."[51] Special Condition AQ-1 will be implemented to "reduce the off-road equipment engine emissions, particularly NOx and particulate matter emissions."[52] This Special Condition acts as a mitigation measure for the purposes of CEQA. This measure must be implemented as binding mitigation in an EIR in compliance with CEQA.

Special Condition AQ-1 is not enforceable mitigation under CEQA. Dr. Fox notes in her comments, that "without enforceable mitigation… construction emissions would be significant."[53] Further, the Project Applicant has not made assurances as to the availability of Tier 4 equipment and whether the implementation of Special Condition AQ-1 is even possible. Dr. Fox provides that "In general, Tier 4 construction equipment availability is limited."[54] Given that the Tier 4 equipment may not be available for the Applicant's use during construction, Tier 4 equipment cannot adequately reduce significant construction air emissions. Rather than admitting that the Project requires mitigation in the form of Tier 4 equipment, the City obfuscates the CEQA process by requiring a special condition on the Project.

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[50] 13 Cal. Code Regs. § 2449(d)(6); See CARB In-Use Off Road Diesel-Fueled Fleets Regulation Overview, available at https://ww2.arb.ca.gov/sites/default/files/classic/msprog/ordiesel/faq/overview_fact_sheet_dec_2010-final.pdf.
[51] CEQA Guidelines § 15370.
[52] IS/ND, p. 4-9.
[53] Fox Comments, p. 11.
[54] *Id.*

The IS/ND also suggested the use of emission reduction credits ("ERCs") to offset VOC emissions, disregarding Dr. Fox's prior comments explaining that ERCs are not valid mitigation. Nevertheless, the IS/ND improperly claims that none of them are mitigation. This is another violation of CEQA, which prohibits the use of mitigation measures disguised as project features.[55]

A negative declaration is, by definition, a declaration that the Project needs no mitigation because it will not result in any impacts. If any measures are imposed to avoid adverse impacts, even if the agency chooses to call them by another name, their very existence invalidates the preparation of an ND. An EIR must be prepared.

C. The Port Failed to Adequately Respond to SAFER CA's Comments and Failed to Proceed in a Manner Required by Law

The Port failed to comply with CEQA when it failed to respond adequately to the vast majority of the comments we submitted on the Draft IS/ND, as well as failing to respond altogether to nearly all of the comments submitted by our technical expert, Dr. Fox.

The Port's responses to Dr. Fox's comments failed to address any of the specific, technical evidence she cited and instead simply directed the reader to its responses to comments by other commenters, most of which do not contain the same level of technical detail. Evidence of this egregious failure by the Port to uphold its duty to fully consider public comments can be seen in the attached Staff Report and Responses to Comments. Agencies are required to provide "detailed written response to comments . . . to ensure that the lead agency will fully consider the environmental consequences of a decision before it is made, that the decision is well informed and open to public scrutiny, and the public participation in the environmental review process is meaningful."[56] Comments raising significant environmental issues must be addressed in detail.[57] Failure of a lead agency to respond to comments before approving a project frustrates CEQA's informational purpose, rending an EIR legally inadequate.[58] "There must be good faith, reasoned

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[55] *Lotus v. Department of Transportation* (2014) 223 Cal.App.4th 645, 658.
[56] *City of Long Beach v. Los Angeles Unified Sch. Dist.* (2009) 176 Cal.4th 889, 904.
[57] 14 Cal. Code Regs § 15088(c).
[58] *Flanders Found. v. City of Carmel-by-the-Sea* (2012) 202 Cal.4th 603, 615; *Rural Landowners Ass'n v. City Council* (1983) 143 Cal.3d 1013, 1020.

analysis in response. Conclusory statements unsupported by factual information will not suffice."[59]

Further, numerous instances can be found throughout the IS/ND demonstrating the Port's disregard for its legal obligation to comply with CEQA, particularly the aspects of the statute regarding public participation and disclosure of supporting documents. Instead of providing evidence to support its conclusions and to allow the public an opportunity to independently review the Project's potential impacts, the Port offered conclusory statements in its responses to comments, claiming that it coordinated with SCAQMD, for example, "to ensure that all new piping component fugitive VOC emissions are included in the emissions estimate."[60] An agency's conclusory assurances that it has "ensured" the accuracy of a project's estimated impacts ignores the public participation requirement of CEQA. An EIR must be prepared to adequately address and mitigate these issues.

D. The City Failed to Adequately Analyze the Potentially Significant Hazards Impacts Associated with Sea Level Rise

CEQA requires an agency to analyze "any significant environmental effects the project might cause or risk exacerbating by bringing development and people into the area affected."[61] Further, an agency must "evaluate any potentially significant direct, indirect, or cumulative environmental impacts of locating development in areas susceptible to hazardous conditions (e.g., floodplains, coastlines, wildfire risk areas), including both short-term conditions, as identified in authoritative hazard maps, risk assessments or in land use plans addressing such hazards area."[62] This Project potentially exacerbates the risk of sea level rise and resultant hazards impacts at the Project site, due to its direct contribution of greenhouse gas emissions and siting at the Port, and may also be impacted by sea level rise given the proximity of the Project's tanks to the ocean waters at the Port. The Project's primary objective is the storage of crude oil, refinement and burning of which is a primary driver of global warming. The Staff Report does not adequately address the Project's impacts associated with sea level rise as required by CEQA.

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[59] CEQA Guidelines, § 15088, subd. (c); *The Flanders Foundation v. City of Carmel-by-the-Sea* (2012) 202 Cal.App.4th 603, 615; see *Laurel Heights Improvement Assn. v. Regents of University of California* (1993) 6 Cal.4th 1112, 1124.
[60] *Id.*
[61] CEQA Guidelines § 15126.2(a).
[62] *Id.*

SAFER CA recognizes that the court in *Ballona Wetlands Land Trust v. City of Los Angeles* held that CEQA does not require the lead agency to analyze or disclose the effects of sea level rise on the proposed development.[63] CEQA requires analysis and disclosure of a project's effects on the environment, and does not require an analysis of the environment's effect on the project.[64] But in *Cal. Bldg. Indus. Ass'n v. Bay Area Air Quality Mgmt. Dist. (CBIA),* the California Supreme Court carved out an exception to this general rule where a project may exacerbate an environmental hazard.[65] The court held that "the EIR should evaluate any potentially significant impacts of locating development in other areas susceptible to hazardous conditions (e.g., floodplains, coastlines, wildfire risk areas) as identified in authoritative hazard maps, risk assessments or in land use plans addressing such hazards areas."[66] The court requires "evaluating a project's potentially significant *exacerbating* effects on existing environmental hazards – effects that arise because the project "brings people into the area affected."[67]

The Project will exacerbate sea level rise, and may place Project structures in the path of future sea level rise at the Port. Any contribution of greenhouse gas emissions from the Project will result in the worsening of sea level rise in California. "Aggressive reductions in greenhouse gas emissions may substantially reduce but do not eliminate the risk to California of extreme sea-level rise from Antarctic ice loss." [68] Further, "[c]oastal California is already experiencing the early impacts of a rising sea level, including more extensive coastal flooding during storms, periodic tidal flooding, and increased coastal erosion."[69] This Project will contribute GHG emissions through the extraction of the crude oil, the transport and storage, the refinement, and eventually the burning of the final fuel product. All these GHGs will indirectly contribute to the sea level rise that threatens the Port of Long Beach and Project components.

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[63] *Ballona Wetlands Land Tr. v. City of L.A.* (2011) 201 Cal. App. 4th 455.
[64] *Id.*
[65] Cal. Bldg. Indus. Ass'n v. Bay Area Air Quality Mgmt. Dist., (2015) 62 Cal. 4th 369.
[66] *Id.* at 388.
[67] *Id.*
[68] California Ocean Protection Council Science Advisory Team, *Rising Seas in California: An Update on Sea-Level Rise Science* (April 2017). Available at https://www.opc.ca.gov/webmaster/ftp/pdf/docs/rising-seas-in-california-an-update-on-sea-level-rise-science.pdf.
[69] *Id.*

Sea level rise will exacerbate potential hazards on the Project site. If the Project is submerged, Project components may corrode, crude oil may leak and cause a catastrophic crude oil spill. The Staff Report does not remedy the IS/ND's failure to adequately analyze this potentially significant impact. The Staff Report fails to mention the impact at all.

The City of Long Beach issued a draft Climate Action and Adaptation Plan which assumes that sea level will rise 11 inches by 2030, 24 inches by 2050, and 66-inches by 2100.[70] By the City's own calculation, the Project will potentially be subject to upwards of 36 inches of sea level rise, plus additional storm surge inundation, during the Project's lifetime.[71] The Project applicant noted that storage tank life is variable but can often exceed 50 years.[72] The Project site does not contain a flood control system, therefore the potentially significant flood hazard impacts associated with sea level rise remains unmitigated. The IS/ND proposes the use of air driven pumps which would be used to divert 36-inches of sea level rise plus a 100-year flood storm surge inundation over the containment wall during a flood event.[73] This measure is wildly insufficient to protect Project components and sensitive receptors from risks from flooding, hazards, and associated environmental impacts. Further, the City of Long Beach Proposed Climate Action and Adaptation Plan stated:

> [T]he Port of Long Beach studied the combine impacts of [sea level rise], storm surge, and precipitation based flooding from the Dominguez Channel. The modeling found that under extreme conditions, more intensive riverine storms coupled with SLR could cause the Dominguez Channel to overtop its banks, resulting in extensive flooding to Port infrastructure.[74]

By the City's own estimates, even absent a 100-year flood event, the Dominguez Channel may overtop its banks and result in "extensive flooding to Port

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[70] City of Long Beach, Proposed Climate Action and Adaptation Plan, (Nov. 2020) https://www.longbeach.gov/globalassets/lbds/media-library/documents/planning/caap/lb-caap-full-version_dec-14.
[71] *Id.*
[72] IS/ND, p. 4-28.
[73] *Id.*
[74] City of Long Beach, Proposed Climate Action and Adaptation Plan, (Nov. 2020). Available at: https://www.longbeach.gov/globalassets/lbds/media-library/documents/planning/caap/lb-caap-full-version_dec-14.

infrastructure."[75] This impact was not analyzed or mitigated in the IS/ND. The IS/ND is silent to the potential for this event, and fails to provide mitigation to protect Project components and nearby sensitive receptors in the event of a Dominguez Channel flood event. Workers on the Project site could potentially be stranded or endangered during a flood event. The IS/ND does not analyze or mitigate this potentially significant impact.

Further, the Project contravenes the Climate Adaptation and Coastal Resiliency Plan which requires the utilization of adaptation strategies to protect Port assets from future climate stressors, including storm surge and sea level rise.[76]

The Project will bring people into the area affected, including exposing workers and sensitive receptors to hazardous materials and crude oil that may leak as a result of rising seas. The City of Long Beach Proposed Climate Action and Adaptation Plan states that some of the key vulnerabilities in Long Beach include 4 miles of road which provide access to Port of Long Beach facilities.[77] This type of flooding could endanger the health and safety of individuals that the Project brings to the area affected, who may work in the Project vicinity. The Port of Long Beach is the second busiest seaport in the United States.[78] The Project will bring workers and individuals associated with Project construction and operation to the area.

The Project's impacts associated with exacerbating sea level rise, bringing people to the area affected, and contravening the Climate Adaptation and Coastal Resiliency Plan constitute significant impacts under CEQA, which must be analyzed and mitigated in an EIR.

III. SUBSTANTIAL EVIDENCE SUPPORTS A FAIR ARGUMENT THAT THE PROJECT MAY RESULT IN CUMULATIVELY CONSIDERABLE GREENHOUSE GAS EMISSIONS IMPACTS

The IS/ND asserts, absent substantial evidence, that the Project would have a less than significant impact with respect to "cumulatively considerable" impacts.

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[75] *Id.*
[76] Port of Long Beach, Climate Adaptation and Coastal Resiliency Plan (Fall 2016). Available at: https://www.slc.ca.gov/wp-content/uploads/2018/10/POLB.pdf.
[77] City of Long Beach, Proposed Climate Action and Adaptation Plan, (Nov. 2020) https://www.longbeach.gov/globalassets/lbds/media-library/documents/planning/caap/lb-caap-full-version_dec-14.
[78] *Id.*

"Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects."[79] The IS/ND does not analyze or mitigate this potentially significant impact. Cumulative impact analysis is necessary because the full environmental impact of a proposed project cannot be gauged in a vacuum. This Project is a prime example of the principle that "environmental damage often occurs incrementally from a variety of small sources."[80] GHG impact sources may appear insignificant, but assume "threatening dimensions only when considered in light of the other sources with which they interact."[81]

As described in the state's Climate Change Scoping Plan of 2008, GHG sources in the state collectively result in emissions that are higher than the targets established by Assembly Bill 32, which indicates that GHG emissions in the state continue to contribute to a total significant, state-wide cumulative impact.[82] The GHG emissions from this Project will contribute to the cumulatively significant GHG emissions of past projects, current projects and probable future projects. The extraction of crude oil, the storage in the current Project, the refining process, and the resultant burning of the oil will generate significant GHG emissions. The resultant GHG from the burning of the fossil fuels stored on the Project site constitute a cumulatively significant impact.

Dr. Fox concluded that the cumulative GHG impacts of the Project will be significant and remain unmitigated.[83] Dr. Fox cites to numerous Projects including two existing tanks being repurposed for Marathon, the LAX expansion that will collectively contribute significant GHG emissions resulting in a cumulatively significant GHG emissions impact associated with Project buildout and operation. Additionally, the Port of Long Beach recently completed the Gerald Desmond Bridge Replacement Project.[84] The Port is developing the Middle Harbor

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[79] CEQA Guidelines Appendix G.
[80] *Kings County Farm Bureau v City of Hanford* (1990) 221 Cal.App.3d 692, 720.
[81] *Id.*
[82] The California Air Resources Board for the State of California, Climate Change Scoping Plan: a Framework for Change (December 2008), https://ww2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/document/adopted_scoping_plan.pdf.
[83] Fox Comments, p. 10.
[84] Port of Long Beach, Gerald Desmond Bridge Replacement Project, https://polb.com/port-info/projects/#gerald-desmond-bridge-replacement-project.

Redevelopment Project over the next ten years.[85] Additionally the Port is developing the Pier B On-Dock Support Facility, and will develop an I-710 Corridor Project in the near future.[86] The GHG emissions contributed as a result of these Projects, in addition to the proposed Project, may constitute cumulatively significant GHG emissions impacts.

The GHG emissions from the Project are estimated to be 98.9 MTCO2e/yr.[87] the LAX expansion operational GHG emissions were estimated to increase by 12,258 MTCO2e/yr.[88] The other Projects listed above would further increase GHG emissions.[89] The cumulative increase in GHG emissions is greater than 12,358 MTCO2e/yr, which exceeds the SCAQMD GHG significance threshold of 10,000 MTCO2e/yr.[90] Dr. Fox concluded that cumulative GHG emissions are significant, such that an EIR must be prepared in accordance with CEQA.

The Project may result in cumulatively significant GHG emissions in conjunction with other past projects, current projects, and probable future projects. This potentially significant impact should be analyzed in an EIR. The court's reasoning in *Kings County Farm Bureau v. City of Hanford* should be applied in the present case. The court concluded that given the Project's small contribution of ozone would affect an area already beset by excess air pollution, the court required the city to assess whether, given the regional problem, the projects increased emissions would contribute to a significant environmental impact.[91] There, the court held:

> The relevant question to be addressed in an EIR is not the relative amount of precursors emitted by the project when compared with preexisting emissions, but whether any additional amount of precursor emissions should be

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[85] Port of Long Beach, Middle Harbor Redevelopment Project, https://polb.com/port-info/projects/#middle-harbor-redevelopment-project.
[86] Port of Long Beach, Pier B On-Dock Support Facility, https://polb.com/port-info/projects/#pier-b-on-dock-support-facility; Port of Long Beach, I-710 Corridor Project, https://polb.com/port-info/projects/#i-710-corridor-project.
[87] IS/ND, Table 4.8-1, p. 4-28.
[88] Fox Comments, p. 12.
[89] *Id.*
[90] *Id.*
[91] Dave Owen, *Climate Change and Environmental Assessment Law*, 33 Colum. J. Envtl. L. 57 (2008). Available at: http://repository.uchastings.edu/faculty_scholarship/1242 p. 91.

considered significant in light of the serious nature of the ozone problems in the air basin.[92]

Here, the GHG emissions resultant from this Project and other past projects, current projects, and probable future projects may potentially result in cumulatively significant GHG emissions. This impact must be analyzed and mitigated in an EIR.

IV. CONCLUSION

We respectfully request that the Council overturn the Board's approval of the Harbor Development Permit and approval of the IS/ND and require that an EIR be prepared in which all Project impacts are 1) properly analyzed using appropriate methodology, 2) in compliance with the disclosure and public participation requirements of CEQA, 3) and fully disclosed and mitigated before being circulated for the statutorily mandated public review and comment period.

Thank you for your consideration of SAFER CA's Appeal.

Sincerely,

Kelilah Federman

KDF:acp

[92] *Id.*

EXHIBIT A

Phyllis Fox, PhD, PE
745 White Pine Avenue
Rockledge, FL 32955

January 2, 2022

Kelilah D. Federman
Adams Broadwell Joseph & Cardozo
601 Gateway Blvd., Suite 1000
South San Francisco, CA 94080

Dear Ms. Federman:

I have reviewed the Port of Long Beach's staff report in response to the Appeal of the Adoption of the Initial Study/Negative Declaration for the World Oil Tank Installation Project ("POLB Appeal Response").[1] The POLB Appeal Response asserts that the comments on the Draft IS/ND are "fully addressed in the Final IS/ND, Chapter 8 – Responses to Comments."[2] This is incorrect. As I explained in my October 27, 2021 letter, the cited responses do not address any of my comments directly but only ABJC's summary of them or similar comments filed by others. These summaries and related comments differ in important details from my comments.[3] In fact, as I document below, the Project will result in a significant increase in operational VOC emissions, requiring mitigation. Further, the Project will result in a cumulatively considerable increase in VOC and greenhouse gas (GHG) emissions. Thus, an EIR must be prepared for this Project.

1. OPERATIONAL VOC EMISSIONS FROM TANKS ARE SIGNIFICANT

My comments demonstrate that tank VOC emissions are significant, requiring mitigation.[4] There are four sources of VOC emissions from tanks: (1) direct tank

[1] Port of Long Beach, Appeal of the Adoption of the Initial Study/Negative Declaration for the World Oil Tank Installation Project ("POLB Appeal Response"), January 4, 2022; http://longbeach.legistar.com/View.ashx?M=F&ID=10370391&GUID=C72AD8FB-8F34-414B-AA70-2BACFB0C3A22.

[2] POLB Appeal Response, pdf 5, citing Final Negative Declaration/Application Summary Report, World Oil Tank Installation Project, Port of Long Beach, September 2021 (9/2021 IS/ND).

[3] Letter from Phyllis Fox to Kendra Hartmann, ABJC, Re: Rebuttal to Responses to Comments on the Initial Study/Negative Declaration for the World Oil Terminal, Long Beach, California, October 27, 2021 (Fox 10/27/2021 Letter).

[4] Phyllis Fox, Comments on the Initial Study/Negative Declaration for the World Oil Terminal, Long Beach, California, November 20, 2020 (11/20/2020 Fox Comments).

emissions; (2) roof landing emissions; (3) tank degassing emissions; and (4) tank cleaning emissions. The IS/ND significantly underestimated the first source, and omitted the remaining three sources. The responses to comments in the 9/2021 IS/ND and the POLB Appeal Response do not address my comments on these three additional sources of tank emissions.

1.1. Direct Tank Emissions

I commented that VOC emissions from the new tanks were significantly underestimated because they were based on emission estimation procedures that are widely acknowledged to be inaccurate. The responses to comments on the Final IS/ND failed to respond to any of my comments on the significant underestimate in tank VOC emissions. Instead, it only responded superficially to SAFER CA's summaries of my comments or similar comments made by others. The responses entirely ignore my evidence that the methods relied on in the IS/ND to estimate VOC emissions from tanks significantly underestimate tank VOC emissions.[5] My evidence included 35 independent field monitoring studies, including a study conducted by the SCAQMD.[6]

The POLB Appeal Response asserts for the first time that the 35 studies that I cited documenting that tank VOC emissions are significantly underestimated by the methods used in the IS/ND are not substantial evidence:[7]

> SAFER CA's referenced demonstration studies and industry journal articles referred to as "substantial evidence" have not been vetted or approved by any regulatory agency, such as the South Coast Air Quality Management District (SCAQMD), for use in estimating potential future emissions from storage tanks or discreet fugitive sources, such as new petroleum tanks or for establishing thresholds of significance in CEQA analyses. This ground for appeal should be denied.

and[8]

> for those which the Port did not incorporate into the document. SAFER CA's technical expert's opinion that the impacts in the IS/ND are underestimated are primarily based on demonstration projects, such as the FluxSense Study, industry journal articles, or news articles that have not been vetted or approved by any regulatory agency, such as the South Coast Air Quality Management District (SCAQMD), and are not suited for emissions estimation or CEQA significance thresholds; nor are they approved for permitting or regulatory purposes. SAFER CA's comments on the Draft IS/ND and the

These are new, unsupported arguments that were not presented in the responses to comments.[9] They are incorrect. In fact, the methods used in the 35 studies that I cite

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[5] Tank VOC comments in 10/27/2021 Fox Letter, pp. 6-11. Responses to tank VOC comments in: Final Negative Declaration/Application Summary Report, World Oil Tank Installation Project, Port of Long Beach, September 2021 (9/21 IS/ND).[5]

[6] 11/20/2020 Fox Comments, Comment 3. Operational VOC Emissions are Significant.

[7] POLB Appeal Response, pdf 7.

[8] POLB Appeal Response, pdf 107.

demonstrating that the IS/ND tank VOC emissions are underestimated have been vetted and approved by regulatory agencies, including the SCAQMD, the U. S. EPA, the European Union (EU), and others. Further, these methods have been validated by EPA for use in monitoring VOC emissions from fugitive components, which are present on tanks and the connecting pipeline. Further, they are required by SCAQMD Rule 1180 for refinery fenceline monitoring, are used by the California Air Resources Board (CARB) to verify emission inventories based on AP-42 and other similar emission estimating procedures, and are required in the EU.

1.1.1. Remote Sensing Has Been Approved by Regulatory Agencies for Estimating Emissions

The 35 studies that I cite as documenting the underestimation of tank VOC emissions were based on remote sensing, in many cases to validate tank VOC emissions estimated by the TANKS model and AP-42, the methods used in the IS/ND to estimate tank VOC emissions. Contrary to the unsupported opinion in the POLB Appeal Response, remote sensing methods used in these studies have been validated by regulatory agencies and are used to determine compliance with emission limits.

First, the U.S. EPA reviewed tank VOC remote sensing studies in 2015 and compared them to emission estimates made using AP-42. The EPA concluded that "it is reasonable to conclude that long-term emissions rates can be reasonably estimated using the AP-42 emissions estimation methodology. It is also important to note that emissions during short time periods can be up to 10 times higher than the reported annual average emissions."[10] Since then, many studies have been conducted confirming the underestimate in VOC emissions from tanks using the TANKS model and AP-42, reviewed in my 11/20/2020 comments.

Second, the United Nations Economic Commission for Europe's Convention on Long-range Transboundary Air Pollution developed a remote sensing protocol to monitor VOC emissions from the refining and petrochemical industries (the Protocol). In response to this Protocol, the United Kingdom conducted a study at the Shell Stanlow Manufacturing Complex to improve the accuracy of the UK's VOC emissions for the refining and petrochemical industries. The UK study compared VOC emissions calculated using the American Petroleum Institute (API) procedures, which are the AP-42 tank VOC calculation methods, with VOC emissions measured by remote sensing using DIAL. The study concluded that VOC emissions from oil refinery storage tanks were underestimated by the AP-42 procedures. The reasons for the

[9] Final IS/ND, Chapter 8 – Responses to Comments.

[10] 11/20/2020 Fox Comments, p. 10, footnote 40.

underestimate include the use of a fixed fluid temperature, a single wind speed, failure to account for the varying height of the roof, and emissions from the film of liquid hydrocarbons on the tank walls that evaporate as the tanks are emptied.[11] These problems remain.

Third, Swedish authorities, on discovering discrepancies between AP-42 calculated and measured refinery emissions, including refinery tanks, now require the use of remote sensing methods in place of emission factors to estimate tank emissions. Since 1995, all five Swedish refineries report emissions based on continuous emission monitoring using either SOF or DIAL studies, performed at least once every 3 years,[12] recently reduced to once every 2 years.[13] Continuous emission monitoring was required in Sweden for refineries because studies documented that AP-42 underestimate refinery emissions, which include tanks:[14]

> When local Swedish environmental authorities saw the results of DIAL measurements at refineries in the late 1980's and early 1990's, they became skeptical of emissions estimating techniques based on EPA's AP-42 results. In 1992 they required all refineries to submit "measured" emissions. By 1995 they required the measured emissions to be obtained using DIAL, citing flaws with other analytical techniques. The DIAL measurements were required every 3 years. In the early 2000's testing began with SOF, a technique developed at Chalmers University in Sweden. By 2005 the Swedish authorities allowed either DIAL or SOF to be used, but also required the measurements to be taken annually. Currently all refiners in Sweden use SOF, because it is much cheaper than DIAL. There are advantages and disadvantages in both DIAL and SOF techniques which will be discussed later.

Fourth, the EPA has published a handbook on the optical and remote sensing methods used in the studies cited in my 11/20/2020 comments. This handbook specifically states that the remote sensing methods used in most of the 35 studies I cite in my 11/20/2020 comment can be used to determine compliance with ambient regulatory limits (which include the SCAQMD significance thresholds): "Quantitative emissions data from remote measurements may then be used for multiple purposes including possible development of emission factors, evaluation of exposure levels,

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[11] National Physical Laboratory, P. T. Woods and others, A Determination of the Emissions of Volatile Organic Compounds from Oil Refinery Storage Tanks, NPL Report DQM(A)96, October 1993, pp. 16-17; https://eprintspublications.npl.co.uk/1112/1/DQM96.pdf. See also: https://archive.epa.gov/region02/capp/web/pdf/tcc_dial_report_appendix_f.pdf.

[12] Alex Cuclis, Why Emission Factors Don't Work at Refineries and What to Do About It, Paper Presented at the Emissions Inventory Conference in Tampa, Florida, August 13-16, 2012, Exhibit 4 of 11/20/2020 Fox Comments. See also: https://www3.epa.gov/ttnchie1/conference/ei20/session7/acuclis.pdf.

[13] Marianne Ericsson and others, Establishing Refinery Emission Inventories – ORS Measurements or Permit Based Calculations, p. 2; https://racielive.aqrc.ucdavis.edu/sites/g/files/dgvnsk8021/files/inline-files/Marianne%20Ericsson_Establishing%20Refinery%20Emission%20Inventories%20-%20ORS%20Measurements%20or%20Permit%20Based%20Calculations.pdf.

[14] Cuclis, p. 6.

compliance with ambient regulatory limits, and identification of sources of air pollutions."[15]

Fifth, the European Union (EU) is transitioning from calculated to measured emissions starting in 2021 and has developed protocols to manage the perceived uncertainties.[16]

Finally, the EPA has formally recognized the use of the remote sensing methods used in the studies I cite to comply with federal regulations. The Project tanks and the supporting pipelines include "fugitive" components, including flanges, valves, and pumps.[17] These components "leak" VOCs. Leaks are conventionally identified manually using EPA Method 21. Leaks from these components are a major source of VOC emissions. Compliance with emissions from these components is determined under EPA regulations using manual "leak detection and repair" (LDAR) methods.[18] The EPA has thoroughly vetted and approved the use of remote sensing methods, used in the 35 studies I cite in my 11/20/2020 comments, to detect leaks from fugitive components, including those on tanks.[19,20,21]

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[15] U.S. EPA, EPA Handbook: Optical and Remote Sensing for Measurement and monitoring of Emissions Flux of Gases and Particulate Matter, August 2019, pdf 23 (emphasis added); https://www.epa.gov/sites/default/files/2018-08/documents/gd-52v.2.pdf.

[16] Marianne Ericsson and others, Establishing Refinery Emission Inventories – ORS Measurements or Permit Based Calculations; https://racielive.aqrc.ucdavis.edu/sites/g/files/dgvnsk8021/files/inline-files/Marianne%20Ericsson_Establishing%20Refinery%20Emission%20Inventories%20-%20ORS%20Measurements%20or%20Permit%20Based%20Calculations.pdf.

[17] See, e.g., 9/2021 IS/ND, p. 4-8, pdf 36 ("the new piping components (pumps, valves, etc.)…").

[18] Alternative Work Practice to Detect Leaks from Equipment, 73 FR 78199, December 22, 2008; https://www.govinfo.gov/content/pkg/FR-2008-12-22/pdf/E8-30196.pdf. See also: U.S. EPA, Leak Detection and Repair, A Best Practices Guide, 2021; https://www.epa.gov/sites/default/files/2014-02/documents/ldarguide.pdf.

[19] Federal Register Volume 73, No. 246 (73 FR 78199–78219) Alternative Work Practice to Detect Leaks from Equipment. 12/22/2008.

[20] T. L. Footer, J. M. DeWees, E. D. Thomas, B. C. Squier, C. D. Secrest, and A. P. Eisele. 2015. Performance Evaluations and Quality Validation System for Optical Gas Imaging Cameras ORS Handbook Section 2.0 Page 2-77 that Visualize Fugitive Hydrocarbon Gas Emissions. In Proceedings of the 108th Annual Conference of the Air & Waste Management Association. Raleigh, NC, June 25, 2015.

[21] D. Reese, C. Melvin, and W. Sadik. 2007. Smart LDAR: Pipe Dream or Potential Reality? Exxon Mobil Corporation. See also: https://www.arb.ca.gov/lists/com-attach/14-oilandgas2016-UTdWPFM7BSQCW1c4.pdf.

1.1.2. Remote Sensing Has Been Approved by the SCAQMD for Regulatory Purposes

Fourth, my 11/20/2020 comments on the underestimation of tank VOC emissions cite a report commissioned by the SCAQMD to monitor VOCs and HAP emissions from refinery tanks (the "FluxSense Report").[22] This study demonstrated that tank VOC emissions in the SCAQMD (estimated using the same methods as in the IS/ND) were underestimated by an average factor of 6.2 (2.7-12) and benzene by an average factor of 34 (3.2-202), compared to those reported to the SCAQMD in emission inventories[23] using the same methods used in the IS/ND to estimate tank emissions.

This 2017 FluxSense study, documenting the significant underestimation of tank VOC and benzene emissions in the SCAQMD, was based on a SCAQMD-commissioned 2015 FluxSense study. The 2015 FluxSense study evaluated the accuracy of the optical remote sensing methods used in many of the 35 studies I cite in my 11/20/2020 comments to measure VOC emissions from tanks and other stationary sources in the South Coast Air Basin. The 2015 FluxSense study was conducted to determine if remote sensing could be used to comply with SCAQMD Rule 1180.[24,25]

The 2015 FluxSense report, which demonstrated the accuracy of remote sensing for measuring refinery emissions, including from tanks, is the predecessor to the FluxSense Report that I cited in my comments as documenting a factor of 6.2 underestimate of VOC emissions and a factor of 34 underestimate of benzene emissions from tanks when calculated using the IS/ND's tank emission calculation methods. The SCAQMD adopted Rule 1180 on December 1, 2017, based in part on these two FluxSense reports, which clearly document the fact that the methods used to estimate tank emissions in the IS/ND significantly underestimate tank emissions.[26]

In sum, the agency responsible for issuing the air permit for the Project, the SCAQMD, evaluated the use of the remote sensing methods used in the 35 studies I cite in my comments to monitor emissions from petroleum refineries in preparation for the

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[22] FluxSense Report, Exhibit 11 to 11/20/2020 Fox Comments.

[23] FluxSense Report, Exhibit 11 to 11/20/2020 Fox Comments, Table 43, pdf 95.

[24] FluxSense, Using Solar Occultation Flux and Other Optical Remote Sensing Methods to Measure VOC Emissions from a Variety of Stationary Sources in the South Coast Air Basin, 2015. Final Report 14 September 2017; http://www.aqmd.gov/docs/default-source/fenceline_monitoring/project_2/fluxsense_project2_2015_final_report.pdf?sfvrsn=6

[25] SCAQMD, Rule 1180 Implementation Update, December 2019; http://www.aqmd.gov/docs/default-source/fenceline_monitoring/r1180_community_meeting_dec_2019_all_communities_final.pdf?sfvrsn=8

[26] SCAQMD, DRAFT Rule 1180 Community Air Monitoring Plan, 2019; http://www.aqmd.gov/docs/default-source/fenceline_monitroing/r1180_draft_community_monitoring_plan_final_111919.pdf?sfvrsn=8.

adoption of a refinery fenceline monitoring rule, Rule 1180.[27] Rule 1180[28] requires the use of remote sensing equipment to continuously monitor, record, and report air pollutant levels of VOC and HAPs from refineries included in the IS/ND health risk assessment.[29] The methods used to comply with Rule 1180 are the same methods used in the 35 studies that I cite in my comments.

1.1.3. Remote Sensing Is Used by the California Air Resources Board (CARB)

CARB has commissioned studies of emissions of VOCs, air toxics, and greenhouse gases at refineries, ports, oil and gas fields, and dairies using the same remote sensing methods that were used in most of the 35 studies I cite in my 11/20/2020 comments. The CARB-commissioned studies consistently demonstrate that standard emission estimating procedures underestimate emissions from refineries, tank farms, depots, and other sources when calculated with AP-42 and other generic emission factors.[30,31] These studies conclude, for example, that "Bay Area refinery and port NMVOC [non-methane VOCs] emissions were around 2.5 times higher than reported."[32]

1.1.4. Additional Studies Confirm My Comments

Additional studies have been conducted since I wrote my 11/20/2020 comments, such as the CARB commissioned remote sensing studies conducted to confirm reported emission inventories. In sum, FluxSense, the company that has conducted the majority

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[27] Johan Mellavist, FluxSense, Using Solar Occulatation Flux and other Optical Remote Sensing Methods to Measure VOC Emissions from a Variety of Stationary Sources in the South Coast Air Basin, 2015; http://www.aqmd.gov/docs/default-source/fenceline_monitoring/project_2/fluxsense_project2_2015_final_report.pdf?sfvrsn=6.

[28] Rule 1180. Refinery Fenceline and Community Air Monitoring, Adopted December 1, 2017; http://www.aqmd.gov/docs/default-source/rule-book/reg-xi/r1180.pdf.

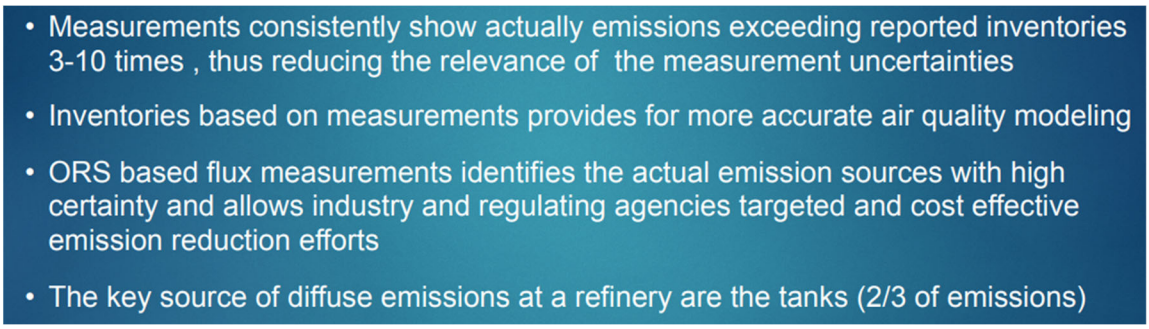
[29] Rule 1180, Section (d) and Table 1.

[30] FluxSense, Inc. Characterization of Air Toxics and Greenhouse Gas Emission Sources and Their Impacts on Community-Scale Air Quality Levels in Disadvantaged Communities; https://ww3.arb.ca.gov/research/single-project.php?row_id=67028. See also: http://ww2.arb.ca.gov/sites/default/files/2021-03/17RD021.pdf.

[31] Johan Mellqvist and others, Characterization of Air Toxics and Greenhouse Gas Emission Sources and Their Impacts on Community-Scale Air Quality Levels in Disadvantaged Communities, Final Report, March 2021; http://ww2.arb.ca.gov/sites/default/files/2021-03/17RD021.pdf.

[32] Johan Mellqvist and others, March 2021, p. 10.

of the studies that document underestimates of VOC emissions using AP-42 emission estimates has concluded as follows:[33]



1.2. Revised Tank Emissions Are Unsupported and Significant

The POLB Appeal Response explains that tank VOC emissions, originally estimated using the TANKS model, "….were re-estimated by the SCAQMD using current guidance in the U.S. EPA-approved AP-42 Emission Estimation Procedures for Floating Roof Tanks rather than the older U.S. EPA TANKS model used in the Draft IS/ND."[34] The 9/2021 IS/ND includes revised unmitigated maximum daily operational emission increases in Table 4.3-2 due to the Project.[35] The revised VOC emissions do not address my 11/20/2020 comments.

First, the TANKS model implements AP-42 so revising the emissions using the underlying equations (or an updated TANKS model) does not solve the underestimate problem. Further, my 11/20/2020 comments and other information in this letter document that AP-42, including the most recent revision, also significantly underestimate tank VOC emissions. In fact, the Port's re-estimation of tank VOC emissions increased them from 9.70 lb/day to 10.82 lb/day, an increase of only 1.12 lb/day. Thus, changing the method of estimating tank emissions (from an outdated version of the TANKS model to the most recent AP-42 update) does not address the factors of 1.5 to 132 (midpoint of 67) underestimate in VOC emissions that I document in my 11/20/2020 comments for tank VOC emissions based on both the TANKS model and AP-42. Further, it does not address the additional recent SCAQMD and CARB studies I review in this letter which likewise document the significant underestimate in VOC emissions when calculated using standard methods.[36] In sum, the POLB Appeal Response does not address my tank VOC underestimate comments.

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[33] Ericsson and other, p. 16.

[34] POLB Appeal Response, pdf 104.

[35] 9/2021 IS/ND, Table 4.3-2, pdf 39.

[36] 11/20/2020 Fox Comments, p. 18.

Second, the revised VOC emissions include an increase in tank fugitive VOC emissions from 9.70 lbs/day to 10.8 lbs/day, cited to four sources: SCAQMD 2019, SCAQMD 2021b, SCAQMD 2021c, and Yorke 2021.[37,38] These sources do not support the revised VOC emissions. SCAQMD 2019 is the SCAQMD's significance thresholds. SCAQMD 2021b is a May 28, 2021 email from the SCAQMD to Jennifer Blanchard, Port of Long Beach (POLB), responding generally to some questions posed by the applicant on the tank emission model, VOC offsets, H2S emissions, and other non-VOC related issues. SCAQMD 2021c is a June 16, 2021 email from the SCAQMD (Tom Liebel) to Jennifer Blanchard (POLB) confirming that the emission calculations were based on the current version of AP-42 (accessed May 2021). These references do not support the VOC emission calculations in Table 6.

The final citation to Yorke 2021 is the Application for Permit to Construct/Permit to Operate – Two Additional Petroleum Storage Tanks (ATC Application).[39] The emission calculations supporting the VOC emissions in the 9/2021 IS/ND Table 4.3-2 are in Appendix B of this Application. However, Appendix B is BLANK in the version of this Application that was produced to my client. Thus, the record before the Port of Long Beach does not contain any support for the Project's operational VOC emissions. This is a serious omission as the record contains substantial evidence documenting that Project VOC emissions are significantly underestimated and are highly significant, requiring mitigation and the preparation of an EIR.

The calculations supporting the tank VOC emissions are complex and cannot be reviewed without the supporting unlocked Excel spreadsheet(s) and TANK model or AP-42 equations inputs and outputs. The supporting calculations were requested in Public Records Act (PRA) requests to the Port, but were not produced. Thus, there is no basis for concluding that tank VOC emissions have been correctly calculated and revised to address my comments.[40] Further, if the calculations are based on the most recent version of AP-42, rather than the TANKS model, they still do not address my comments, which demonstrate that the TANKS model and AP-42 both significantly underestimate tank VOC emissions.

The FluxSense study of tanks commissioned by the SCAQMD documented an average underestimation in VOCs of 6.2 for tanks in the SCAQMD, where the Project is

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[37] Ibid.

[38] 9/2021 IS/ND, pdf 115, 116.

[39] York Engineering, LLC, Ribost Terminal LLC, SCAQMD Facility ID: 111238, Application for Permit to Construct/Permit to Operate – Two Additional Petroleum Storage Tanks, February 2021 (ATC Application). Exhibit 1.

[40] 11/20/2020 Fox Comments.

located. Assuming a factor of 6.2 underestimate, tank VOC emissions would increase from 10.82 lb/day to 67.1 lb/day. The SCAQMD operational VOC significance threshold is 55 lb/day[41] (incorrectly reported in the 9/2021 IS/ND as 75 lb/day, which is the construction VOC significance threshold). Corrected tank VOC emissions alone exceed the operational significance threshold of 55 lb/day. Thus, Project VOC emissions are significant, requiring mitigation.

1.3. Other Sources of Tank Emissions

My 11/20/2021 comments identified three sources of tank emissions that are excluded by the methods used in the IS/ND: (1) roof landing emissions; (2) degassing emissions; and (3) cleaning emissions. These are major sources of tank VOC emissions. While they do not occur every day, based on my extensive experience in the refining industry, when they do occur, they alone could exceed the SCAQMD VOC significance threshold, which is expressed in lb/day.

I have not found any response to these comments in the record before the Port of Long Beach. The words "roof landing" and "degassing" do not occur in the POLB Appeal Response. The word "cleaning" occurs,[42] but not in response to my comments. Further, the 9/21 IS/ND responses to comments do not estimate these emissions and include them in operational VOC emissions. Instead, it asserts that these emissions occur with a very low frequency (approximately every 10 years) and that they must comply with SCAQMD Rule 1149.[43] No support is provided for the asserted every 10 year roof landing, degassing, and cleaning events. Regardless, this does not excuse the Port of Long Beach from including these emissions in its estimate of Project VOC emissions because the significance thresholds are based on pounds per day.

2. CONSTRUCTION EMISSIONS ARE SIGNIFICANT, REQUIRING FORMAL MITIGATION, NOT A SPECIAL CONDITION

The amount of pollution from construction equipment is categorized using a system of "engine tiers." The higher the tier, the lower the emissions.[44] I commented that construction NOx, ROG, and PM10 emissions would be significant unless

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[41] SCAQMD, South Coast AQMD Air Quality Significance Thresholds, April 2019; http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf.

[42] POLB Appeal Response, pdf 134.

[43] 9/2021 IS/ND, pdf 332.

[44] See, e.g., DieselNet, Emission Standards: Nonroad Diesel Engines; https://dieselnet.com/standards/us/nonroad.php. See also: DieselNet, Emission Standards, Nonroad Diesel Engines; https://dieselnet.com/standards/us/nonroad.php#tier4.

enforceable mitigation were imposed to require "Tier 4 Final" engines.[45] The response to this comment in SFERCA-24 asserts that the "fleet average off-road equipment and fleet average on-road vehicles in the CalEEMod, approximately equivalent to Tier 3, were assumed.[46] Further, in response to a PRA requesting all CalEEMod files, an Excel spreadsheet was provided summarizing the input assumptions. This spreadsheet indicates that "Tier 4 Final" construction equipment was assumed in the CalEEMod analysis of construction emissions.[47] Tier 4 Final engines have the lowest emissions.[48]

The engine tier regulations apply to equipment manufacturers, not equipment users. California Air Resources Board (CARB) regulations governing construction fleets (engine users) have a longer timeframe, allowing phasing-in of higher tier equipment and/or upgrades to existing, lower-tiered construction equipment to Tier-4-equivalent best available control technology ("BACT") over a number of years.[49] For example, Tier 2 equipment was not required to be added to construction fleets until 2014; Tier 3 equipment was not required to be added to large and medium-sized fleets until 2018, and is not required to be added to small fleets until 2023; and older equipment may still be in operation even after the phase-in deadlines.[50]

As a result, off-road construction fleets may continue to offer lower tiered construction equipment for many years, and construction fleets/off-road engine users are not currently required to use or provide exclusively Tier 3 or Tier 4 equipment for construction projects in California.[51] Thus, regardless of the assumed tiers in the IS/ND's emissions modeling, the IS/ND does not contain an enforceable condition requiring the Applicant's construction contractor to use either Tier 3 or Tier 4 Final engines, as assumed in the CalEEMod analysis. Without a binding mitigation measure

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[45] 11/20/2020 Fox Comments, Comment 2.1.

[46] Response to Comment SFERCA-24.

[47] 11/20/2020 Fox Comments, Comment 2, p. 3.

[48] CARB, Non-road Diesel Engine Certification Tier Chart, available at https://ww2.arb.ca.gov/resources/documents/non-road-diesel-engine-certification-tier-chart.

[49] See CARB In-Use Off Road Diesel-Fueled Fleets Regulation Overview, , available at https://ww2.arb.ca.gov/sites/default/files/classic/msprog/ordiesel/faq/overview_fact_sheet_dec_2010-final.pdf.

[50] *Id*. at pp. 4-5; 13 Cal. Code Regs. § 2449(d)(6).

[51] CARB regulations require operational off-road vehicles used at California ports (mobile cargo handling equipment) to have Tier 4 engines. 13 Cal. Code Regs. § 2479(e); see also https://www.aqmd.gov/docs/default-source/ab-617-ab-134/steering-committees/wilmington/handouts-may9-2019.pdf?sfvrsn=8, at p. 9. However, this regulation does not apply to off-road construction equipment.

or condition of approval specifically requiring Tier 3 or Tier 4 Final engines, the applicant is not obligated to use either of them for this Project.

Instead of requiring enforceable mitigation, the 9/2021 IS/ND proposes Special Condition AQ-1: Non-Road Engine Emissions standard. This is not enforceable mitigation. This condition requires that "…all construction equipment meet the United States Environmental Protection Agency Tier 4 non-road engine standards."[52] The IS/ND further explains that as "…the unmitigated emissions are below the SCAQMD emissions significance thresholds no emissions mitigation is required and Special Condition AQ-1 is not identified as a CEQA mitigation measure…"[53] This is inadequate to assure construction emissions are not significant for two reasons.

First, the IS/ND modeled construction emissions assuming Tier 4 Final engines, not Tier 4 engines.[54] The NOx emissions from Tier 4 Final engines are lower than the NOx emissions from Tier 4 engines.[55] Thus, the IS/ND's emission calculations include only mitigated emissions, and not unmitigated emissions, which would exceed SCAQMD thresholds if lower tier construction equipment is used. The IS/ND's statement that "no emissions mitigation is required" because unmitigated emissions are below SCAQMD thresholds is therefore unsupported. The only way to ensure that construction emissions are below SCAQMD thresholds is with mitigation. Special Condition AQ-1 must be revised to require all Tier 4 Final engines.

Second, Special Condition AQ-1 is not enforceable, as documented below. Without enforceable mitigation, my comments demonstrate that construction emissions could be significant. The tier of the engine in construction equipment determines the emissions. Earlier versions of the Project's CalEEMod construction analysis specifically identified Tier 4 engines as "mitigation."[56]

The engine tier standards apply to new equipment that equipment manufacturers must comply with, not construction contractors. Equipment

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[52] 9/2021 IS/ND, p. 4-9, pdf 37.

[53] 9/2021 IS/ND, p. 4-10, pdf 38.

[54] 11/20/2020 Fox Comments, Comment 2, p. 3.

[55] CARB, Non-road Diesel Engine Certification Tier Chart; https://ww2.arb.ca.gov/resources/documents/non-road-diesel-engine-certification-tier-chart; CARB, CARB Strategies for Reducing Emissions from Off-Road Construction Equipment, January 27, 2021, pdf 5; http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/printer-friendly-combined-construction-carb-amp-aqmp-presentations-01-27-21.pdf?sfvrsn=8.

[56] PRA Response, POLB Followup, File: 20180914_Aspen_RIBOST_CalEEMod input file_ATT 2.XLS;, which is CalEEMod Version: CalEEMod.2016.3.2, Rune: 8/21/2019 tab "tblConstEquipMitigation".

manufacturers can no longer produce off-road equipment with lower engine tiers, e.g., Tier 3 or Tier 4 engine, based on a phase-in schedule. Thus, the availability of existing Tier 4 engines will decline over the horizon of this Project's construction.

Lower tier equipment is cheaper than newer tier equipment. An applicant will select the cheapest equipment that can perform a task. The documents I reviewed are silent on the availability of Tier 4 (and Tier 4 Final) engines for the equipment required to construct this project. In general, Tier 4 construction equipment availability is limited. Further, Tier 4 equipment is more expensive than lower tier equipment. Thus, unless this special condition is made enforceable, there is no guarantee that the Applicant will comply. Failure to comply could result in significant NOx, ROG, and PM10 construction emissions. I recommend that the following conditions be imposed:

(1) Include the Tier 4 Final requirement in all bid documents, purchase orders, and contracts;

(2) Successful contractor(s) must be required to demonstrate the ability to supply Tier 4 Final equipment prior to any ground disturbing and construction activities;

(3) A copy of each unit's certified tier specification or model year specification and CARB or SCAQMD operating permit (if applicable) shall be available upon request at the time of mobilization of each unit of equipment;

(4) Written construction documents by the construction contractor(s) that ensure compliance with Tier 4 Final standards; and

(5) Regular inspections of all construction equipment tiers by a licensed independent contractor, e.g., a licensed professional civil or mechanical engineer.[57]

It is reasonably feasible that Tier 4 Final construction equipment may not be available for all required equipment when it is needed. In this event, before using non-compliant construction equipment, the Project representative or contractor must:

1. Demonstrate that the use of non-compliant construction equipment will not result in a significant impact. This demonstration must be based on emission calculations with written findings supported by substantial evidence that is approved by the Port.

[57] See, for example, Lijin Sun, J.D., SCAQMD, Comments on Mitigated Negative Declaration (MND) for the Proposed ENV-2018-6903;10810 West Vanowen Street Project, July 10, 2019; http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2019/july/LAC190702-08.pdf?sfvrsn=8.

2. Adopt alternative strategies to the use of Tier 4 Final, which may include the reduction in the number and/or horsepower rating of construction equipment, limiting the number of daily construction haul truck trips to and from the Project site, using cleaner vehicle fuel, and/or limiting the number of individual construction project phases occurring simultaneously.

3. Retrofit or repower lower tier equipment to meet Tier 4 Final standards by, for example, using equipment that has been retrofit with diesel particulate traps or selective catalytic reduction (SCR).[58]

In sum, construction NOx emissions are significant, unsupported, and unmitigated. Rather than admit that Tier 4 engines must be required to mitigate significant construction NOx emissions, the IS/ND imposes a "special condition" requiring Tier 4 final engines. This "special condition" is mitigation, requiring preparation of an IS/MND or EIR.

3. CUMULATIVE VOC AND GHG IMPACTS ARE SIGNIFICANT

Mandatory findings of significance are required if a project has impacts that are individually limited but cumulatively considerable. As defined by Section 15065 of the CEQA Guidelines, "cumulatively considerable means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, other current projects, and probable future projects."[59]

The IS/ND concluded that all cumulative impacts were less than significant without identifying any cumulative projects or conducting a cumulative impact analysis.[60] Instead, the 9/2021 IS/ND asserts that the Project's operational air quality and GHG impacts are not "cumulatively considerable" because "The proposed Project, as well as all other current projects (e.g., similar ongoing or reasonably foreseeable future construction projects) in the region, would comply with applicable SCAQMD standards, recommendations, and regulations, which are designed to limit air quality impacts within its jurisdiction, as well as State laws. As such, all potential cumulative impacts regarding air quality and greenhouse gas emissions would be limited and

[58] See, e.g., CARB, Off-Road Vehicle Research; https://ww2.arb.ca.gov/resources/documents/off-road-equipment-research.

[59] CEQA Guidelines §15065(a)(3).

[60] See, e.g., 9/2021 IS/ND, p. 4-68, pdf 96.

minimized."[61] As I noted in my 11/20/2020 comments, this violates both CEQA and SCAQMD guidance.

Under CEQA, "[c]umulative impacts refers to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts."[62] "The individual effects may be changes resulting from a single project or a number of separate projects."[63] Further, "the cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time."[64] According to CEQA Guidelines Section 15064, compliance with a significance threshold "does not relieve a lead agency of the obligation to consider substantial evidence indicating the project's environmental effects may still be significant." [65]

Thus, while the Project's construction air quality impacts are individually minor and operational air quality impacts for all pollutants but VOCs (Comment 1) are individually minor, they are cumulatively significant when considered with other reasonably foreseeable projects. Further, while the Project's GHG construction and operational impacts are individually minor, they are cumulatively significant when considered with other reasonably forseeable projects.

The SCAQMD, where the Project is located, has provided guidance on an acceptable approach to address cumulative air quality impacts. This guidance states: "As Lead Agency, the AQMD uses the same significance thresholds for project specific and cumulative impacts for all environmental topics analyzed in an Environmental Assessment or EIR … Projects that exceed the project-specific significance thresholds are considered by the SCAQMD to be cumulatively considerable."[66] Comment 1 documents that VOC emissions from Project operation are significant. Thus, under the SCAQMD guidance, VOC emissions are *per se* cumulatively significant, requiring the preparation of an EIR.

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[61] Ibid.

[62] CEQA Guidelines §15355.

[63] CEQA Guidelines §15355(a).

[64] CEQA Guidelines §15355(b).

[65] CEQA Guidelines §15064(b)(2).

[66] SCAQMD, White Paper on Potential Control Strategies to Address Cumulative Impacts from Air Pollution, Appendix D – Cumulative Impact Analysis Requirements Pursuant to CEQA, August 2003.

Greenhouse gas (GHG) emissions are also cumulatively significant when considered together with other cumulative project in the general area. Some of the cumulative projects include:

- Repurposed existing tanks
- LAX expansion[67]
- Projects under review and/or certified by the Port of Los Angeles including:[68]
    1. Pier B On-Dock Rail Support Facility
    2. Middle Harbor Terminal Redevelopment Project

All of the emissions from these and other nearby projects will be released into the same air basin, adversely affecting air quality in the vicinity of the Project.

The Project's operational GHG emissions were estimated to be 98.9 MTCO2e/yr.[69] The LAX expansion operational GHG emissions were estimated to increase by 12,258 MTCO2e/yr.[70] The other projects listed supra would also cumulatively increase GHG emissions. The cumulative increase in GHG emissions is greater than 12,358 MTCO2e/yr,[71] which exceeds the SCAQMD GHG significance threshold of 10,000 MTCO2e/yr.[72] Thus, cumulative GHG emissions are significant, requiring the preparation of an EIR.

[67] City of Los Angeles, Final Environmental Impact Report (Final EIR), Airfield & Terminal Modernization Project, August 2021; https://www.lawa.org/atmp/documents. .

[68] The Port of Los Angeles, Projects Under Environmental Review and Projects Certified by the Board of Harbor Commissioners; https://www.portoflosangeles.org/environment/environmental-documents.

[69] 9/2021 IS/ND, Table 4.8-1, p. 4-28, pdf 56.

[70] LAX FEIR, Table 6, p. F2-24, pdf 40.

[71] Cumulative increase in GHG emissions due to Project plus LAX expansion = 98.9 + 12,259 = 12,358 MTCO2e/yr.

[72] SCAQMD, South Coast AQMD Air Quality Significance Thresholds; http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf.

In sum, the Project will result in significant, unmitigated operational VOC emissions and significant cumulative VOC and GHG emissions, requiring the preparation of an EIR.

Sincerely,

Phyllis Fox, PhD, PE

RIBOST TERMINAL, LLC.

1405 Pier "C" Street, Long Beach, CA 90802

SCAQMD Facility ID: 111238

February 2021

Prepared by:

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Application for Permit to Construct/Permit to Operate – Two Additional Petroleum Storage Tanks

Permit to Construct/Permit to Operate: Two Additional Petroleum Storage Tanks

Prepared for:

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90802

SCAQMD Facility ID: 111238

February 2021

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Permit to Construct/Permit to Operate Two (2) Additional Petroleum Storage Tanks

1.0 INTRODUCTION

Ribost Terminal, LLC. (Ribost), SCAQMD Facility ID 111238, is submitting this application request for a Permit to Construct (PTC) and subsequent Permit to Operate (PTO) for two (2) proposed new internal floating roof petroleum storage tanks which will be operated by the Ribost facility located on Pier C in Long Beach, California. Each tank will be capable of storing 25,000 barrels of petroleum products, will be capable of transferring to and from existing product lines and an existing truck rack, and will be capable of receiving from an existing crude oil pipeline from upstream oil production facilities operated in Long Beach.

This application package contains the information necessary for the SCAQMD to process and approve these applications, including facility information (Section 1.0), process and equipment descriptions (Section 2.0), emission estimates (Section 3.0), and rule applicability and compliance determinations (Section 4.0). Application forms and supporting information are provided in the appendices.

1.1 Facility Information

Facility information is included in Table 1-1

Table 1-1: Facility Contact Information

Applicant's Name:	Ribost Terminal, LLC
Facility ID:	111238
Equipment Location:	1405 Pier "C" Street Long Beach, CA 90802
Mailing Address:	9301 Garfield Avenue South Gate, CA 90280
Responsible Official: **Title:** **Telephone Number:**	Jeff Baxter Executive Vice President, Operations (562) 928-7000
Contact: **Title:** **Telephone Number:**	David Chetkowski Environmental Manager (562) 928-7000 ext. 2329

The Ribost facility is located in an industrial area of Long Beach. The tanks will be located at the Ribost terminal facility in Pier C. The two new storage tanks will be located in the north-west portion of the facility boundary. The nearest school is located approximately 3,145 feet southeast of this location. The facility is surrounded by other commercial business to the south and west of the facility location. As such, the nearest commercial facility is located approximately 275 feet from the facility location. An aerial photo depicting the Ribost facility and the surrounding area is provided in Figure 1-1. A more detailed visual of where the proposed two tanks will be built within the facility boundary is provided in Figure 1-2.

Figure 1-1: Map of Facility

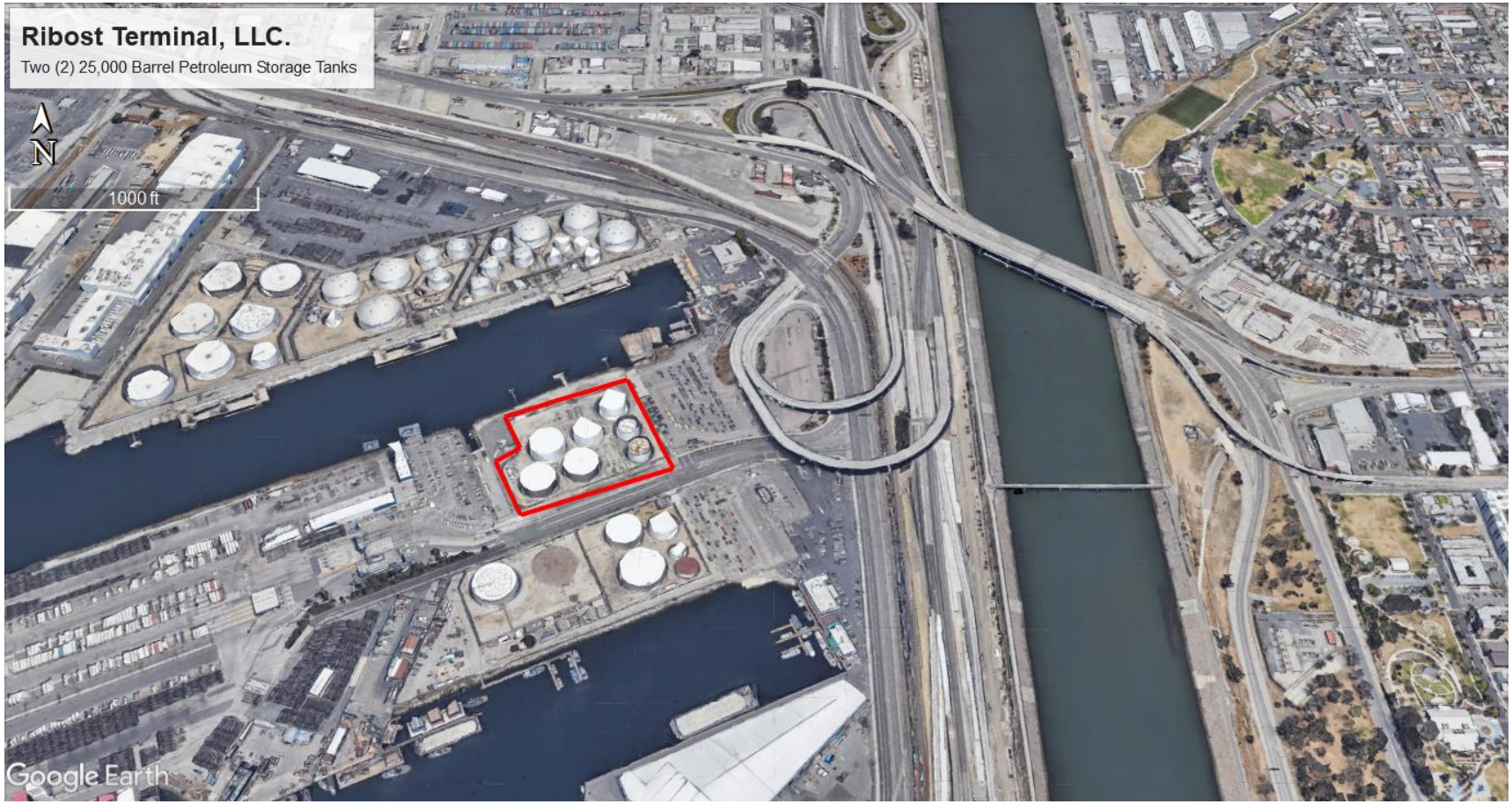
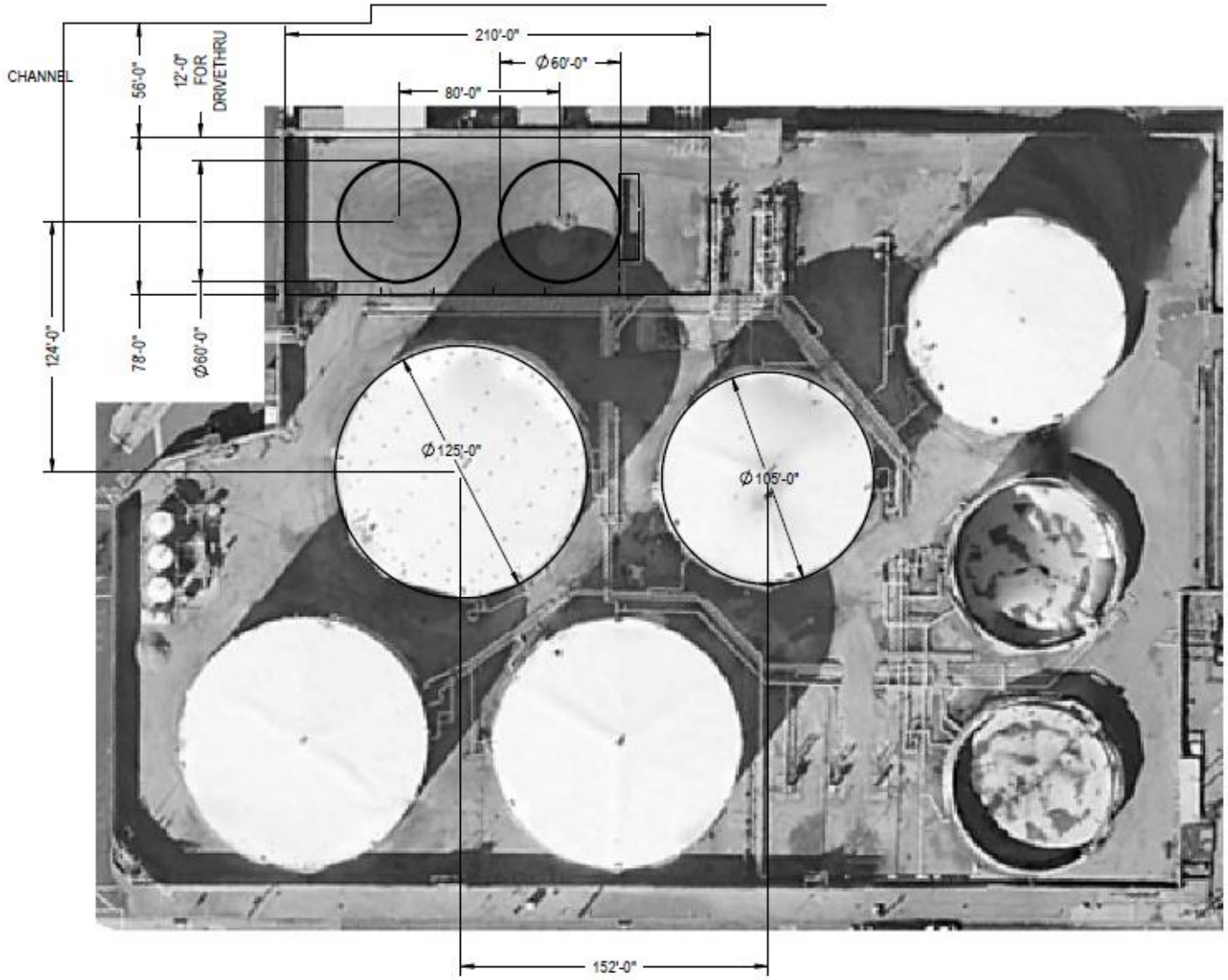


Figure 1-2: Location of Tanks within Facility Boundary



1.2 Proposed Permit Actions

Ribost is requesting a PTC/PTO for the two (2) 25,000-barrel internal floating roof petroleum storage tanks to be installed within the existing terminal facility location. The facility is not a Title V or RECLAIM facility. A list of application forms provided with this application is provided in Table 1-2. The application forms are provided in Appendix A.

Table 1-2**: Summary of Requested Permit Actions and Application Forms**

Device	Form	Title
Tank 1 (TK-1): 25,000 Barrel Petroleum Storage Tank	400-A	Application for Permit or Plan Approval
	400-E-18	Storage Tank
Tank 2 (TK-2): 25,000 Barrel Petroleum Storage Tank	400-A	Application for Permit or Plan Approval
	400-E-18	Storage Tank
Project	400-CEQA	California Environmental Quality Act (CEQA) Applicability

1.3 Application Preparation

This permit application was prepared by Nick Molzahn and Shirley Pearson of Yorke Engineering, LLC. Contact information is provided in Table 1-4.

Table 1-3: Application Preparers

Nick Molzahn	
Yorke Engineering, LLC	
Cellular:	(415) 897-6203
Email:	NMolzahn@YorkeEngr.com
Shirley Pearson, PE, CPP	
Yorke Engineering, LLC	
Work:	(949) 248-8490
Email:	SPearson@YorkeEngr.com

2.0 PROCESS AND EQUIPMENT DESCRIPTION

2.1 Process Description

The proposed project is to build two (2) additional 25,000-barrel storage tanks at the Ribost terminal facility and to integrate these tanks into all existing product transfer capabilities already existing at the facility. The new tanks will be able to transfer products to and from existing pipelines and also receive petroleum products from upstream oil production facilities also located in Long Beach, CA.

The new tanks will be designed in accordance with API-650 standards and South Coast Air Quality Management District (SCAQMD) Rule 463 for Class I or Class II liquids with RVP up to 10.0 psi. These standards will require key design features such as a ringwall foundation, closed roof with internal floating roof (IFR), foam protection to the vapor space, and corrosion and cathodic protection systems.

The capacity of the new tanks is intended to maximize the storage capacity to existing physical boundaries, which at present are 1) proximity to adjacent tanks, 2) peripheral access for emergency and utility vehicles, and 3) geotechnical conditions that may limit the height of the tanks. The proposed project will consist of two 60 foot diameter x 56 foot high tanks with approximately 500 barrels per foot (bbl/ft) capacity up to 50 feet working height.

2.2 Operating Schedule

Ribost can operate up to 24 hours per day, 7 days per week, and 365 days per year. The operating schedule is summarized in Table 2-1.

Table 2-1: Operating Schedule

Operating Parameter	Average	Maximum
Hours/Day	24	24
Days/Week	7	7
Days/Year	365	365
Weeks/Year	52	52

3.0 EMISSIONS

Emissions were calculated based on a product profile of RVP 10.0 psi available in the TANKS 4.09d (TANKS) program. Details of the tank fittings were provided by the facility and used to calculate accurate emissions from the tank. Where necessary, custom fittings were created in TANKS to align with the latest AP-42, Chapter 7.1 emission factors, specifically for ladder-slotted guidepole combinations. A final fitting detail can be provided to SCAQMD upon construction of the tank.

Fugitive emissions were estimated per SCAQMD "Guidelines for Reporting VOC Emissions from Component Leaks", using the Correlation Equation (Method 2)[1] with a screening value of 500 ppm. Component counts and calculations are shown in Appendix B.

Table 3-1 shows the parameters used to define the tank in the TANKS program.

Table 3-1: TANKS Parameters

Parameter	Value	Comments
Tank Dimensions		
Shell Height (ft)	56	
Diameter (ft)	60	
Maximum Liquid Height (ft)	50	
Average Liquid Height (ft)	50	
Turnovers/yr	Varies	
Net Throughput (gal/yr)	37,800,000 (75,000 bbl./month)	
Paint Characteristics		
Internal Shell Condition	Light Rust	
Shell Color/Shade	White/White (D)	
Shell Condition	Good	
Roof Color/Shade	White/White (D)	
Roof Condition	Good	
Rim Seal System		
Primary Seal	Liquid-mounted Mechanical Shoe	Required Per Rule 463 and BACT
Secondary Seal	Rim-mounted	
Deck Characteristics		
Deck Type	Welded	
Deck Fitting Category	Detailed	Bolted, Gasketed Deck Fittings Refer to Form E-18 for details
Meteorological Data		
Location	Long Beach, CA	
Product		
Description	Petroleum Distillates	RVP Pressure: Gasoline (RVP 10)

[1] https://www.aqmd.gov/docs/default-source/planning/annual-emission-reporting/guidelreportvocemiscomleaks.pdf?sfvrsn=15

Table 3-2: Summary of VOC Emissions

Criteria Pollutant	AHU/MHU (lb/hr)	AHC/MHC (lb/hr)	MDU/MDC (lb/day)	AA (lb/yr)	30DA (lb/day)
Tank 1	1.42E-01	1.42E-01	3.41E+00	1,245.17	3.41
Tank 2	1.42E-01	1.42E-01	3.41E+00	1,245.17	3.41
Fugitive Emissions	8.91E-02	8.91E-02	2.14E+00	780.93	2.14
Total	**3.73E-01**	**3.73E-01**	**8.96E+00**	**3,271.27**	**8.96**

TANKS Losses (lb/yr) = Working Losses (lb/yr) + Breathing Losses (lb/yr)

For VOC:

AA (lb/year) = TANKS Losses (lb/year)
MDC (lb/year) = AHC/MHC (lb/hr) x 24
MDU (lb/day) = AHU/MHU (lb/hr) x 24
AHC/MHC (lb/hr) = AHU/MHU (lb/hr) = AA (lb/yr) / 8,760

3.1 TAC Emissions from the Storage Tanks

The storage tanks are designed to store petroleum products with RVP up to 10 psia, including atmospheric gas oil (AGO), heavy vacuum gas oil (HVGO), light vacuum gas oil (LVGO), fuel oil, crude oil, gasoline, and petroleum distillates. The product vapor pressure was compared to the data available in Chapter 7: Liquid Storage Tanks, AP-42, Fifth Edition, Volume 1. Another comparative analysis was taken from the toxic speciation data tables available in the SCAQMD Supplemental Instructions for Liquid Organic Storage Tanks which is a guideline document for calculating emissions for Annual Emissions Reporting (AER). Toxic speciation data is available for various gasoline and crude products except for residual oil. In the absence of this information, Yorke identified toxic data that best corresponds to the product with vapor pressure closest to the contents of the tank. Hydrogen sulfide emissions were calculated based on an assay of the stored crude oil; the contents which would have the highest hydrogen sulfide emissions.

As such, the crude oil speciation table was used to calculate toxic emissions from the storage tank. Table 3-3 provides a summary of the toxic emission associated with the operation of the two internal floating roof tanks.

Table 3-3: Summary of Toxic Emissions (Aggregate Emissions from Two Tanks)

Chemical	Rule 1401	CAS No.	Liquid Percentage (%)	MHU (lbs/hr)	MHC (lbs/hr)	MAC (lbs/yr)
Hexane (-n)	Yes	110543	0.40%	1.49E-03	1.49E-03	13.09
Benzene	Yes	71432	0.60%	2.24E-03	2.24E-03	19.63
Isooctane	No	26635643	0.10%	3.73E-04	3.73E-04	3.27
Toluene	Yes	108883	1.00%	3.73E-03	3.73E-03	32.71
Ethylbenzene	Yes	100414	0.40%	1.49E-03	1.49E-03	13.09
Xylenes	Yes	1330207	1.40%	5.23E-03	5.23E-03	45.80
Isopropyl Benzene	No	98828	0.10%	3.73E-04	3.73E-04	3.27
1,2,4 - Trimethylbenzene	No	95636	0.33%	1.23E-03	1.23E-03	10.80
Cyclohexane	No	110827	0.70%	2.61E-03	2.61E-03	22.90
Hydrogen Sulfide	Yes	7783064	0.00035%	1.31E-06	1.31E-06	0.01

Details of the criteria and toxic emissions which were calculated are provided in Appendix B of this application.

4.0 RULE COMPLIANCE EVALUATION

This section provides a review of the applicable requirements and describes how the equipment and emissions will comply with applicable standards.

4.1 Regulation II – Permits

4.1.1 Rule 212, Standards for Approving Permits and Issuing Public Notice

The proposed equipment is not located within 1,000 feet of a K-12 school. The estimated VOC emissions from additional two tanks do not exceed the thresholds identified in Rule 212 (g). The Maximum Individual Cancer Risk (MICR) is expected to be below 1 in a million. Therefore, public notice is not required for this application.

Table 4-1: Rule 212 Public Notice Evaluation

Pollutant	Daily Emissions (lbs/day)	Rule 212 Notification Threshold	Notification Required? (Yes/No)
Total VOC's	8.96	30	No

4.2 Regulation III - Fees, Rule 301, Permit Fees

The application processing fees were determined using Rule 301 and are summarized in Table 4-2.

Table 4-2: Application Processing Fees

Equipment/ Item	Rule 301 Table IA/IB Description	Schedule	Proposed Permit Action	Fee
Storage Tank (TK-1)	Storage Tank, Fixed Roof with Internal Floater	C, FY 2020-2021	Permit Processing	$4,659.33
Storage Tank (TK-2)	Storage Tank, Fixed Roof with Internal Floater	C, FY 2020-2021	Permit Processing (Identical)	$2,329.67
			Total	**$6,989.00**

4.3 Regulation IV - Prohibitions

4.3.1 Rule 401, Visible Emissions

The internal floating roof tanks are expected to operate without visible emissions. Compliance with Rule 401 is expected.

4.3.2 Rule 402, Nuisance

No nuisance odor is expected as a result of additional tanks operating at the terminal facility.

4.3.3 Rule 463 – Organic Liquid Storage

This rule applies to any above-ground stationary tank with a capacity of 75,000 liters (19,815 gallons) or greater used for storage of organic liquids, and any above-ground tank with a capacity between 950 liters (251 gallons) and 75,000 liters (19,815 gallons) used for storage of gasoline.

Rule 463 applies to the two additional petroleum storage tanks. Best Available Control Technology (BACT) for liquid storage tanks that operate with internal floating roofs (IFR) requires Category A Tank Seals and compliance with Rule 463. Category A primary seals as identified within the rule are either: 1) Liquid mounted multiple wipers with drip curtain and weight or 2) Liquid mounted mechanical shoe. Secondary seals for Category A seals are identified as having multiple wipers. Tank roof requirements for internal floating roof tanks are identified in section (c)(2)(B) of the rule. For IFR tanks installed after June 1, 1984, tanks are required to have a single liquid mounted primary seal or a primary and secondary seal.

Based on the project description, the IFR storage tanks are to be constructed to comply with Rule 463 and will have a single liquid mounted mechanical shoe primary seal as well as a rim mounted secondary seal. Compliance with other requirements, as identified within the rule, is expected. Compliance with Rule 463 is expected.

4.4 Regulation IX – Standards for Performance for New Stationary Sources (NSPS)

4.4.1 40 CFR Subpart Kb – Standards of Performance for Volatile Organic Liquid Storage Vessels (including Petroleum Liquid Storage Vessels) for which Construction, Reconstruction, or Modification Commenced after July 23, 1984

This federal standard applies to storage vessels that have a capacity greater than or equal to 151 cubic meters (950 barrels) storing a liquid with maximum true vapor pressure greater than 3.5 kilopascals (0.51 psia). Based on the specifications of the tanks that are to be built, the facility is subject to the requirements in Subpart Kb. Inspection and recordkeeping requirements specified within the rule are expected and compliance is expected.

4.5 Regulation XI – Source-Specific Standards

4.5.1 Rule 1149, Storage Tank and Pipeline Cleaning and Degassing

The purpose of this rule is to reduce VOCs and toxics emissions from roof landings, cleaning, maintenance, testing, repair and removal of storage tanks and pipelines. This rule applies to the cleaning and degassing of a pipeline opened to atmosphere outside the boundaries of a facility, stationary tank, reservoir, or other container, storing or last used to store VOCs. Compliance with Rule 1149 is expected.

4.5.2 Rule 1173 – Control of Volatile Organic Compound Leaks and Releases from Components at Petroleum Refineries and Chemical Plant

This rule is intended to control VOC leaks from components and releases from atmospheric process pressure relief devices (PRDs). This rule applies to components at refineries, chemical plants, lubricating oil and grease re-refiners, terminals, oil and gas production fields, natural gas processing plants and pipeline transfer stations.

Final count of fugitive emissions after the construction of the two tanks and other modified valves, fittings, and headers will be inventoried. Overall, an increase in fugitive emissions from the facility are expected to be minimal and continued compliance with Rule 1173 is expected after the construction of the two tanks.

4.6 Regulation XIII - New Source Review; Rule 1303, Requirements

4.6.1 Rule 1303(a) – Best Available Control Technology (BACT)

> *"The Executive Officer or designee shall deny the Permit to Construct for any relocation or for any new or modified source which results in an emission increase of any nonattainment air contaminant, any ozone depleting compound, or ammonia, unless BACT is employed for the new or relocated source or for the actual modification to an existing source."*

BACT for liquid storage tanks with internal floating roofs requires Category A Seals and compliance with Rule 463. Rule 463 defines Category "A" seals are seals approved by the Executive Officer as most effective in the control of VOCs and are deemed Best Available Control Technology (BACT) according to the criteria set forth in Attachment A - "Floating Roof Tank Seal Categories." Section (c)(2)(B) of Rule 463 requires IFR tanks installed after June 1, 1984 to have a single liquid mounted primary seal or a primary and secondary seal. Based on the project description, the IFR storage tanks are to be constructed to comply with Rule 463 and will have a single liquid mounted mechanical shoe primary seal. A rim-mounted secondary seal will also be added as a feature of both tanks. Compliance with other requirements, as identified within the rule, is expected. Compliance with Rule 463 is expected and as such, compliance with BACT is also expected.

4.6.2 Rule 1303 (b)(1) – Modeling

The Executive Officer or designee shall, except as Rule 1304 applies, deny the permit to construct for any new or modified source which results in a net emissions increase of any nonattainment air contaminant at a facility, unless the applicant substantiates with modeling that the modification will not cause a violation, or make significantly worse an existing violation according to Appendix A or other analysis approved by the Executive Officer or designee, of any state or national ambient air quality standards at any receptor location in the District. The additional two petroleum storage tanks do not emit quantities of emissions equaling or exceeding the non-combustion thresholds listed in Table A-1 of Rule 1304; therefore, modeling is not required.

4.6.3 Rule 1303 (b)(2) – Emission Offsets

The Executive Officer of designee shall, except as Rule 1304 applies, deny the permit to construct for any new or modified source which results in a net emissions increase of any nonattainment air contaminant at a facility, unless the applicant offsets the emission increased by either Emission Reduction Credits (ERCs) approved pursuant to Rule 1309, or application from the Priority Reserve in accordance with provisions of Rule 1309.1 or allocations from the Offset Budget in accordance with the provisions of Rule 1309.2.

Yorke utilized SCAQMD Facility Information Detail (FIND) database to evaluate previous annually reported criteria pollutant emissions from Calendar Year (CY) 2019. In CY 2019, the facility VOC emissions were reported as 3.314 tons per year (tons/year). Emissions from the two additional storage tanks are projected to add approximately 1.64 tons of VOC emissions per year. As a result, the post modification emissions from the facility are projected to be over 4 tons of VOC emissions per year and the facility is required to provide offsets for the project. Ribost will work with SCAQMD permitting personnel to ensure the

appropriate amount of offset emissions are provided prior to the construction of the storage tanks. Compliance with Rule 1303 (b)(2) is expected.

4.7 Regulation XIV - Toxics and Other Non-Criteria Pollutants

4.7.1 Rule 1401, New Source Review for Air Toxics

Rule 1401 applies to new, relocated, and modified permit units. Based on the toxic speciation data for crude oil, toxic emissions were calculated for both tanks. For compounds that are identified in Rule 1401, a Health Risk Assessment (HRA) was completed using the District's risk tool. Results from the HRA indicate that toxic emissions are below cancer risk thresholds for residential and commercial receptors. The toxic emissions associated with the tank passed based on results from the Tier II evaluation. Therefore, New Source Review for Toxics is not triggered, and compliance is expected.

A copy of the HRA completed is provided in Appendix D of this application package.

4.8 California Environmental Quality Act (CEQA)

A Form 400-CEQA is provided in Appendix A.

APPENDIX A – SCHEDULE OF APPLICATION FORMS

Device	Form	Title
Tank A: 25,000 Barrel Petroleum Storage Tank	400-A	Application for Permit or Plan Approval
	400-E-18	Storage Tank
Tank B: 25,000 Barrel Petroleum Storage Tank	400-A	Application for Permit or Plan Approval
	400-E-18	Storage Tank
Project	400-CEQA	California Environmental Quality Act (CEQA) Applicability

APPENDIX B – EMISSION CALCULATIONS

APPENDIX C – HEALTH RISK ASSESSMENT

APPENDIX D – EQUIPMENT SPECIFICATIONS

-----Original Message-----
From: Bryan Quigley [mailto:b@bryanquigley.com]
Sent: Tuesday, January 4, 2022 3:47 PM
To: CityClerk <CityClerk@longbeach.gov>
Subject: Please do not approve World Oil Tank Installation (Agenda 26)

-EXTERNAL-

We need to do no more fossil fuel infrastructure - especially as this expands capacity when we need to be in drawdown.

Please do not allow any new fossil fuel instrasture in Long Beach.

Kind regards,
Bryan Quigley

From: Kartik Raj [mailto:kraj@earthjustice.org]
Sent: Monday, January 3, 2022 6:06 PM
To: CityClerk <CityClerk@longbeach.gov>
Cc: oespino-padron@earthjustice.org
Subject: Supplemental Documents for World Oil Appeal

-EXTERNAL-

Office of City Clerk of Long Beach:

Please find attached supplemental documents for submission to the Long Beach City Council, regarding the appeal of the World Oil Tank Installation Project.

Thank you,
Kartik Raj (*he/him/his*)
Community Partnerships Program Legal Fellow
Earthjustice Los Angeles Office
707 Wilshire Blvd., Suite 4300
Los Angeles, CA 90017
T: (213) 766-1085
earthjustice.org

EARTHJUSTICE
COALITION FOR CLEAN AIR
EAST YARD COMMUNITIES FOR ENVIRONMENTAL JUSTICE
CENTER FOR COMMUNITY ACTION AND ENVIRONMENTAL JUSTICE
COMMUNITIES FOR A BETTER ENVIRONMENT
CENTER FOR BIOLOGICAL DIVERSITY
SIERRA CLUB – ANGELES CHAPTER

VIA: ELECTRONIC MAIL ONLY

January 3, 2022

Honorable Members of the City Council
c/o Monique De La Garza, City Clerk
City of Long Beach, California
333 West Ocean Blvd., Lobby Level
Long Beach, CA 90802
(562) 570-6101
cityclerk@longbeach.gov

RE: Submission of Supplemental Documents Relating to the Appeal of Long Beach Board of Harbor Commissioners' Approval of World Oil Tank Installation Project (HD-21-537)

Members of the Long Beach City Council:

Earthjustice writes to provide the following supplemental documents to the Long Beach City Council. These documents are pertinent to the appeal of the World Oil Tank Installation Project and do not raise new grounds for appeal.

Page Number(s)	Document Title
1-32	SCAQMD Annual Progress Report for AB 617 Community Emissions Reduction Plans
33-42	California Energy Commission - California Oil Refinery History
43	SCAQMD – World Oil South Gate Refinery NOVs
44	Toxic Tides Report – Number of At-Risk Facilities
45-46	Toxic Tides Report – Annual Flood Risk
47-55	Toxic Tides Report – Case Studies
56-57	Toxic Tides Report – Fact Sheet
58-62	Toxic Tides Report – Maps & Data
63-69	US EPA ECHO – World Oil Refinery Detailed Facility Report
70-72	World Oil – Divisions Page
73-83	World Oil – Recycling Brochure
84-86	World Oil – Recycling Page

ANNUAL PROGRESS REPORT FOR AB 617 COMMUNITY EMISSIONS REDUCTION PLANS

October 2020

South Coast Air Quality Management District

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
GOVERNING BOARD

Chairman: DR. WILLIAM A. BURKE
Speaker of the Assembly Appointee

Vice Chairman: BEN BENOIT
Council Member, Wildomar
Cities of Riverside County

MEMBERS:

KATHRYN BARGER
Supervisor, Fifth District
County of Los Angeles

LISA BARTLETT
Supervisor, Fifth District
County of Orange

JOE BUSCAINO
Council Member, 15th District
City of Los Angeles Representative

MICHAEL A. CACCIOTTI
Council Member, South Pasadena
Cities of Los Angeles County/Eastern Region

VANESSA DELGADO
Senate Rules Committee Appointee

GIDEON KRACOV
Governor's Appointee

LARRY MCCALLON
Mayor, Highland
Cities of San Bernardino County

JUDITH MITCHELL
Council Member, Rolling Hills Estates
Cities of Los Angeles County/Western Region

V. MANUEL PEREZ
Supervisor, Fourth District
County of Riverside

CARLOS RODRIGUEZ
Council Member, Yorba Linda
Cities of Orange County

JANICE RUTHERFORD
Supervisor, Second District
County of San Bernardino

EXECUTIVE OFFICER:

WAYNE NASTRI

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INTRODUCTION

Assembly Bill (AB) 617 was signed into law in July 2017, requiring new community-focused and community-driven action to reduce air pollution and improve public health in communities experiencing disproportionate burdens from exposure to air pollutants. Three of the ten statewide communities selected by the California Air Resources Board (CARB) in the first year of the AB 617 program are in the South Coast Air Basin. These communities are commonly referred to as 2018–designated AB 617 communities and include:

- East Los Angeles, Boyle Heights, West Commerce (ELABHWC)
- San Bernardino, Muscoy (SBM)
- Wilmington, Carson, West Long Beach (WCWLB)

Following input from Community Steering Committees (CSCs) in each of the 2018-designated AB 617 communities, the South Coast AQMD Governing Board adopted Community Emissions Reduction Plans (CERPs) on September 6, 2019. The CERPs identify actions to reduce emissions and exposures to criteria air pollutants and toxic air contaminants in each community.

BACKGROUND AND PURPOSE

AB 617 and the CARB Community Air Protection Blueprint require air districts to prepare annual progress reports summarizing the results of implementing CERPs.[1, 2] This report summarizes the progress of CERP implementation in 2018-designated AB 617 communities in the South Coast Air Basin from September 6, 2019 to June 30, 2020. Additionally, the report covers information on incentive funds distributed in the communities from July 26, 2017 to June 30, 2020. The report also includes air monitoring activities initiated by staff since June 2019, a part of the Community Air Monitoring Plans (CAMPs). The report is based on the guidelines set forth in the CARB Community Air Protection Blueprint and includes the following:

- Community profile updates
- An overview of the CERP framework
- Status of CERP actions, goals and strategies
- Metrics for tracking progress
- A qualitative assessment of CERP progress
- A summary of key plan adjustments

COMMUNITY PROFILE UPDATES

The community profile used to develop the CERPs established a baseline for each AB 617 community based on the types of pollution impacting each community, public health data, and

[1] Health and Safety Code Section 44391.2 (C)(7)
[2] California Air Resources Board "Community Air Protection Blueprint", 2018, https://ww2.arb.ca.gov/capp-blueprint. Accessed June 18, 2020.

socioeconomic factors. Data from CalEnviroScreen 3.0, Multiple Air Toxics Exposure Study (MATES) IV, and Southern California Association of Governments (SCAG) were used to inform the community profile. Since the adoption of the CERPs these data sources have not been updated; therefore, no changes to the established community profile are required.

Since the adoption of the CERPs by the South Coast AQMD Governing Board, the onset of the pandemic caused by COVID-19 has significantly altered the daily lives of communities around the world. However, mounting evidence indicates that community strategies to slow the spread of COVID-19 may cause unintentional harm, such as lost wages, reduced access to services, and increased stress, for some racial and ethnic minority groups.[3] South Coast AQMD staff is closely monitoring this information and its impacts on the data used to develop the CERPs.

OVERVIEW OF CERP FRAMEWORK

The air quality priorities for each 2018–designated AB 617 community was determined by the CSCs and identified in the CERPs. The air quality priorities focused the CERPs on addressing local air quality concerns from residents, community groups, and local businesses. The air quality priorities are below.

East Los Angeles, Boyle Heights, West Commerce

- Neighborhood and Freeway Traffic from Trucks and Automobiles
- Railyards (On-site Emissions)
- Metal Processing Facilities
- Rendering Facilities
- Auto Body Shops
- Schools, Childcare Centers, Community Centers, Libraries, and Public Housing Projects
- General Concerns about Industrial Facilities, including Waste Transfer Stations

Wilmington, Carson, West Long Beach

- Refineries
- Ports
- Neighborhood Truck Traffic
- Oil Drilling and Production
- Railyards
- Schools, Childcare Centers, and Homes

San Bernardino, Muscoy

- Neighborhood Truck Traffic
- Warehouses
- Omnitrans

[3] Centers for Disease Control and Protection, Health Equity Considerations and Racial and Ethnic Minority Groups. https://www.cdc.gov/coronavirus/2019-ncov/community/health-equity/race-ethnicity.html, Accessed August 4, 2020.

- Railyards (On-site Emissions)
- Concrete Batch, Asphalt Batch, and Rock and Aggregate Plants
- Schools, Childcare Centers, Community Centers, and Homes

To address the air quality priorities listed above, each CSC developed a set of actions and goals to achieve emissions and exposure reductions. The CERPs call for actions and goals to be implemented through six types of strategies including: rules and regulations, enforcement, air monitoring, collaboration, incentives, and public information and outreach. Figure 1 – Overview of Community Emissions Reduction Plans demonstrates the relationship between actions, goals, strategies, and emission and exposure reductions.

Figure 1: Overview of Community Emissions Reduction Plans

STATUS OF CERP ACTIONS, GOALS AND STRATEGIES

As described in the background and purpose section above, this report focuses on CERP implementation progress from September 6, 2019 to June 30, 2020. This report also includes the various air monitoring activities initiated by staff since June 2019, a part of the Community Air Monitoring Plans (CAMPs) developed for the 2018-designated AB 617 communities. The CAMPs support the actions and goals in each respective CERP and are available at http://www.aqmd.gov/nav/about/initiatives/community-efforts/environmental-justice/ab617-134/ab-617-community-air-monitoring#. Additionally, the report covers information on incentive funds distributed in the communities from July 26, 2017 to June 30, 2020. South Coast AQMD staff developed a table (see Attachment A) for each community summarizing the status (e.g.,

implementation milestones and completed elements) of the actions, goals, and strategies requiring implementation during the reporting periods identified above.

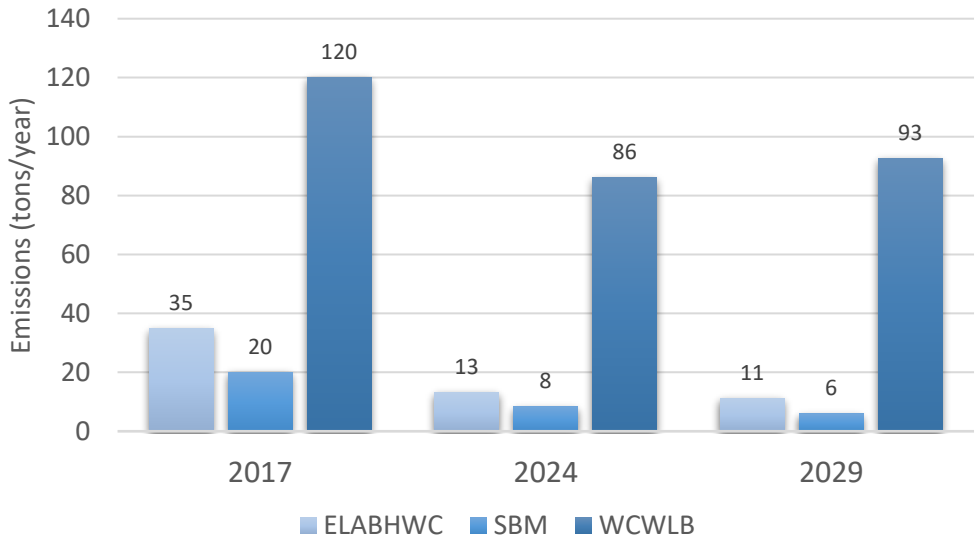
The CARB Board formally approved the CERPs for the 2018-designated AB 617 communities on September 10, 2020. Future progress reports will address all other actions approved by the CARB Board and actions, goals, and strategies requiring implementation after June 30, 2020.

Metrics for Tracking Progress

Baseline Emissions

Per CARB Guidance, CERP emissions baselines are 2017 and include milestone years 2024 and 2029. South Coast AQMD staff worked with CARB staff, the AB 617 Technical Advisory Group (TAG), and the CSCs to develop the baseline and forecasted emissions inventories for the milestone years 2024 and 2029. Diesel particulate matter (DPM) is the largest contributor to toxic air contaminants in each community. Figure 2 – DPM Emissions by Community shows the DPM emissions for the baseline year and milestones years in 2018-designated AB 617 communities. These charts reflect emission reductions from rules already adopted prior to the CERPs, and do not reflect any additional emission reductions that would result from the CERP actions. Additional baseline and milestone year emissions data for other pollutants are available in Chapter 5a: Actions to Reduce Community Air Pollution in the CERPs.

Figure 2 – DPM Emissions by Community



Emission Reduction Targets

The actions, goals, and strategies in the CERPs define a path to reduce air pollution from sources and provide additional protections at schools that reduce harmful air pollution exposure for the children who spend time at those schools. In some instances, the actions, goals, and strategies reaffirm ongoing rule development efforts and provide new commitments for localized reductions, sharing emissions data, timelines, and other related information. Further, the actions, goals and

strategies in the CERPs prioritize emission reductions and set forth emission reduction targets for the milestone years 2024 and 2029 summarized in Table 1 – Overview of Emissions Reduction Targets by 2029.

Table 1 – Overview of Emissions Reduction Targets by 2029* (tons/year)

AB 617 Community	NO_X	SO_X	VOC	DPM
ELABHWC	377	--	--	1.4
SBM	127.9	--	--	0.91
WCWLB [4]	3,207[5]	11	64	20

*Estimated emission reductions from regulations are subject to future assessments and regulatory analyses.

The reporting period for this annual progress report is limited to less than nine months from the date the South Coast AQMD Governing Board adopted the CERPs. As implementation continues, South Coast AQMD staff will work with CARB staff, the AB 617 TAG, and CSC's to quantify future emission reductions achieved by the CERP. For example, CARB recently adopted the Advanced Clean Trucks Rule requiring truck manufacturers to transition from producing diesel trucks and vans to electric zero-emission trucks, including heavy-duty vehicles beginning in 2024. The Advanced Clean Trucks Rule is a strategy in the CERPs and accounted for in the emission reduction targets. Therefore, South Coast AQMD staff will work with CARB staff, the AB 617 TAG, and the CSC to quantify the emissions reductions from each CERP, based on the rule implementation schedule beginning in 2024.

Additionally, staff will work with the CSCs and TAG to refine emission reduction targets and provide information about community level exposures to ambient air toxics when new information becomes available from community air monitoring efforts. For example, continuous metals air monitoring recently deployed at Resurrection Church in the ELABHWC community will provide information about community levels of air toxics and help track ambient air toxics levels.

[4] Per CARB guidance, the emissions baseline was estimated for 2017, and milestone years 2024 and 2029. However, the emission reductions for WCWLB in this table target a 2030 completion date, due to the complexity of the efforts. While the baseline emissions were not calculated for 2030, staff expect the emissions to be similar to the 2029 estimates.

[5] Based on maximum NOx emission reductions that may be reduced from Action 5 of WCWLB CERP Chapter 5b that is designed to achieve further reductions from refinery equipment through adoption of Proposed Rule 1109.1 – Refinery Equipment

Qualitative Assessment

As discussed above, the reporting period for this annual progress report is limited to less than nine months from the date the South Coast AQMD Governing Board adopted the CERPs. Although South Coast AQMD staff will work with CARB staff, the AB 617 TAG, and CSC's to quantify future emission reductions achieved by the CERP, this section provides a qualitative assessment of the CERP strategies (e.g., enforcement and air monitoring) implemented through June 30, 2020.

Incentives

Incentives are a strategy to achieve emission reductions for numerous actions in all three CERPs for the 2018-designated AB 617 communities. For mobile source incentives, South Coast AQMD staff adheres to the Carl Moyer Program and Prop 1B guidelines, both of which are the framework used for AB 617 project evaluations.

South Coast AQMD prioritizes eligible projects in AB 617 communities based on a process that identifies and prioritizes zero-emission projects followed by projects using the cleanest available technologies. The total investments in incentives in 2018-designated AB 617 communities from July 16, 2017 to June 30, 2020 for mobile sources and resulting emissions reductions are in Table 2 – Mobile Source Incentives in 2018-designated AB 617 Communities, below.

Table 2 – Mobile Source Incentives in 2018-designated AB 617 Communities

Community	Total Incentives Distributed (millions of dollars)	NOX	PM	VOC
		tons per year		
ELABHWC	20.7	48.1	0.6	2.0
SBM	9.6	79.7	1.3	2.3
WCWLB	53.6	179	4.1	8.6

Additionally, on April 22, 2020, South Coast AQMD staff submitted a disbursement request for Community Air Protection Program (CAPP) incentive funds to CARB for community-identified project categories, including school air filtration systems in all three 2018-designated AB 617 communities and hexavalent chromium plating facility projects in the ELABHWC community. CARB approved the disbursement request in the second quarter of 2020. The South Coast AQMD staff will begin to work with local school districts to install air filtration systems that reduce children's exposure to DPM at schools. Additionally, South Coast AQMD staff will pursue projects in the ELABHWC community to reduce emissions from hexavalent chromium plating facilities beyond regulatory requirements.

Enforcement

For all CERP actions, the South Coast AQMD Office of Compliance and Enforcement (OCE) staff has made progress in conducting field activities and taking enforcement action. Field activities

include community-specific complaint responses, evaluating and addressing notifications (e.g., equipment breakdowns or flaring), facility inspections, surveillance operations, and other daily functions carried out by OCE staff. An overview of the types of enforcement activities in the 2018-designated AB 617 communities are below.

ELABHWC

- Industrial/Autobody Facilities – Inspections have been conducted regularly at industrial facilities
- Rendering Facilities – Inspectors have regularly conducted compliance activities in and around rendering facilities to ensure compliance with Rule 415, relevant orders of abatement, and all other applicable air quality rules and regulations
- Metals Facilities – Inspections are conducted regularly and partnerships with the Monitoring Division have ensured that any elevated emissions are identified and investigated
- Idling Trucks – All quarterly idling truck sweeps committed to in the CERP to date have been conducted, and these operations incorporate community input, fleet data, and historical locations where idling tends to occur (see Table 3 below)

SBM

- Cement/Asphalt Facilities – All the cement/asphalt facilities were inspected in 2019
- Omnitrans – Both Omnitrans facilities have been inspected within the last year
- Idling Trucks – All quarterly idling truck sweeps committed to in the CERP to date have been conducted, and these operations incorporate community input, fleet data, and historical locations where idling tends to occur (see Table 3 below)

WCWLB

- Oil Wells – Inspections have been conducted regularly at oil wells, initiated by both mobile monitoring and compliance staff
- Oil Refineries – In addition to regular surveillance with the FLIR camera, OCE staff continues to conduct inspections, respond to all notifications, audits emissions, and facility inspections
- Oil Tankers – During the COVID-19 period, inspectors conduct daily surveillance along the shoreline and inner Long Beach Harbor. In the course of these and past investigations, multiple oil tankers have been boarded and inspected once docked at the port
- Idling trucks – All quarterly idling truck sweeps committed to in the CERP to date have been conducted, and these operations incorporate community input, fleet data, and historical locations where idling tends to occur (see Table 3 below)

Table 3 – Idling Truck Sweeps Conducted within 2018-designated AB 617 Communities[6]

Inspection Date	Number of Trucks Inspected	Certified Clean Idle Stickers	Notice of Violation
ELABHWC			
10/17/2019	24	0	0
10/18/2019	11	0	0
2/25/2020	17	10	1
5/19/2020	62	36	0
SBM			
9/26/2019	24	0	2
11/10/2019	11	7	0
3/31/2020	8	2	0
6/4/2020	18	16	0
WCWLB			
9/26/2019	75	2	0
1/28/2020	59	40	0
2/4/2020	0	0	0
4/29/2020	85	65	4
Totals:	**394**	**178**	**7**

Air Monitoring

AB 617 Community Air Monitoring continued to be conducted in all three South Coast AQMD 2018-designated communities as part of the AB 617 program. The locations and types of pollutants monitored are unique to each community and are determined through collaboration with the CSCs and guided by the Community Air Monitoring Plans (CAMPs). Data collected from air monitoring provides valuable information about air pollution sources, types of pollutants, and air quality impacts in AB 617 communities. Monitoring data resulting from the implementation of the CAMPs also supports CERP implementation.

To keep CSC's informed of monitoring conducted for the CAMP and CERP, South Coast AQMD staff developed infographics that track the progress of monitoring activities. The infographics have been provided to the CSC and are available on the AB 617 community webpages listed below. Additionally, the infographics are in Attachment B – Community Air Monitoring Updates.

- ELABHWC – http://www.aqmd.gov/ab-617/CAMP/infographics/ELABHWC
- SBM – http://www.aqmd.gov/ab-617/CAMP/infographics/SBM
- WCWLB – http://www.aqmd.gov/ab-617/CAMP/infographics/WCWLB

[6] Truck idling inspection locations were selected based on complaints received, CARB data sources, and locations prioritized by each respective CSC during the truck idling location prioritization activities conducted in October 2019.

Additionally, South Coast AQMD staff created an Air Monitoring Data Display for the public to view monitoring data collected at the community level for each 2018-designated AB 617 community. The Air Monitoring Data Display is available at http://xappprod.aqmd.gov/AB617CommunityAirMonitoring/Home.

Rules and Regulations

Each CERP also includes a regulatory strategy to achieve emission reductions for mobile and stationary sources. Table 4 – Status of Rules Required to be Considered for CERPs from September 6, 2019 to June 30, 2020, provides a status update of rules that are identified in the CERPs as part of the strategy to achieve emission reduction targets.

Table 4 – Status of Rules Required to be Considered for CERPs from September 6, 2019 to June 30, 2020

Regulation	Purpose	Agency	CERP Community	Expected Public Hearing Date	Updated Public Hearing Date	Status of Development
Control Measure for Ocean-Going Vessels At-Berth (At-Berth Regulation)	The Proposed Regulation would take effect in 2021 and is designed to achieve further emissions from vessels at berth to reduce adverse health impacts to communities surrounding ports and terminals throughout California.	CARB	WCWLB	December 2019	8/27/2020	Regulation was approved by CARB's Board.
Advanced Clean Truck Regulation	The Advanced Clean Truck Regulation is a requirement for truck manufacturers to sell zero-emission trucks in California and a one-time requirement for large entities to report about their facilities, types of truck services used, and fleet of vehicles.	CARB	ELABHWC, SBM, WCWLB	Early 2020	6/25/2020	Regulation was approved by CARB's Board.
Proposed Rule 2305 - Warehouse Indirect Source Rule (ISR) - Warehouse Actions and Investments to Reduce Emissions (WAIRE) Program	This rule would establish a new regulatory program applicable to warehouses greater than 100,000 square feet. This rule would provide a menu of potential	South Coast AQMD	ELABHWC, SBM, WCWLB	Early 2020	First Quarter 2021	In response to COVID-19, public hearing dates have been delayed to allow more time to work with stakeholders and to incorporate modifications to the rulemaking process.

Regulation	Purpose	Agency	CERP Community	Expected Public Hearing Date	Updated Public Hearing Date	Status of Development
	compliance options for industry.					
Rail Yard Indirect Source Rule (ISR)	The proposed new regulation would reduce regional and local emissions from rail yards, consistent with the 2016 AQMP and the AB 617 CERPs.	South Coast AQMD	ELABHWC, SBM, WCWLB	December 2020	Second Quarter 2021	In response to COVID-19, public hearing dates have been delayed to allow more time to work with stakeholders and to incorporate modifications to the rulemaking process.
Memorandum of Understanding (MOU) for Marine Ports	Following Board's direction, staff has been pursuing a MOU with the Ports based on the San Pedro Bay Ports Clean Air Action Plan (CAAP) measures.	South Coast AQMD	WCWLB	December 2019	TBD	The Ports MOU is under development and will be based on the CAAP measures.

Collaboration

Collaboration with other public agencies and community groups is key to implementing the CERP. Examples of collaboration with other public entities and community groups initiated during this reporting period are outlined below.

- CARB and South Coast AQMD conducted joint workshops within the SBM and ELABHWC communities to discuss Railyard ISR development
- In addition to enhanced mobile source regulation enforcement within each community, South Coast AQMD and CARB enforcement are working together to receive approval from schools, and municipalities to install "no idling" signs near these sensitive receptors to prevent idling
- South Coast AQMD and Los Angeles County Department of Public Health initiated discussions to develop outreach material for various actions for the WCWLB and ELABHWC CERPs
- South Coast AQMD initiated discussions with WCWLB community-based organizations to develop and plan asthma related outreach that will discuss air quality impacts in the community and identify the benefits of air filtration systems at schools
- South Coast AQMD and Los Angeles County Department of Regional Planning initiated discussions during the ELABHWC CERP development regarding the county's proposed Green Zones Ordinance (GZO) and continued collaboration efforts through interagency participation during CSC meetings and GZO working group meetings
- South Coast AQMD and CARB are working together to deploy Automated License Plate Reader (ALPR) systems in SBM and ELABHWC communities and Portable Emissions Acquisitions System (PEAQS) within the ELABHWC community.

The Air Grants Program[7] and Supplemental Environmental Projects[8] (SEPs) can support CERP implementation. The Air Grants Program supports for community-based organizations to participate and build capacity to become active partners in the AB 617 process. SEPs fund community-based projects from a portion of the penalties received during the settlement of enforcement actions. Several community-based organizations in South Coast AQMD 2018-designated AB 617 communities are awardees of the Air Grants Program and SEPs. Future annual progress reports will summarize the contributions of community-led projects funded by the Air Grants Program and SEPs to the CERPs for 2018–designated AB 617 communities.

Public Information and Outreach

A list of key public outreach events conducted from September 6, 2019 to June 30, 2020 for CERP implementation is in Table 5 – Key Public Outreach Efforts.

[7] CARB Community Air Grants: Proposed Awardees. https://ww2.arb.ca.gov/our-work/programs/community-air-protection-program/community-air-grants/proposed-awardees. Accessed August 14, 2020.

[8] CARB Supplemental Environmental Projects (SEPs). https://ww2.arb.ca.gov/our-work/programs/supplemental-environmental-projects-seps/about. Accessed September 1, 2020.

Table 5 – Key Public Outreach Efforts

AB 617 Community	Outreach Efforts
WCWLB	Staff presented at the Wilmington Neighborhood Council Meeting in January 2020 to provide an overview of the AB 617 program, training on filing an air quality complaint, and truck idling enforcement within the community.
WCWLB	As part of the Why Air Quality Matters (WHAM) High School Education Program, staff met with students at Carson High School in February 2020 and provided an overview of South Coast AQMD, an introduction to air pollution, and AB 617 efforts within the community.
SBM	As part of the SBConnect Series: Why Healthy Air Matters, staff provided two virtual presentations to San Bernardino area high school students on April 22, 2020 and provided an overview of South Coast AQMD, an introduction to air pollution, and a dry ice experiment.
SBM	In coordination with Safe Routes Partnership, a presentation was made to the SBM CSC on May 21, 2020. The presentation highlighted the work being done in San Bernardino, Muscoy to create safer and healthier walkable neighborhoods for students and families.
ELABHWC	As part of the Why Heathy Air Matters (WHAM) High School Education Program, staff taught 11 classes from November 2019 to March 2020 that focused on air quality at schools within the community boundary, which included Boyle Heights STEM High, James A. Garfield High School, and Roosevelt High School - Math, Science, and Technology Magnet.

Since March 2020, South Coast AQMD outreach efforts have mostly transitioned to a virtual format in response to COVID-19 and related health orders. For example, in May of 2020, outreach for Carl Moyer funding opportunities was conducted via webcast in place of public workshops in the community. The workshops were posted to South Coast AQMD's website, sent to email subscribers, and shared with CSC members.

SUMMARY OF KEY PLAN ADJUSTMENTS

South Coast AQMD staff is actively working on Proposed Rule 2305 Warehouse Indirect Source Rule – Warehouse Actions and Investments to Reduce Emissions (WAIRE) Program. South Coast AQMD staff released the first draft rule in May 2020. The purpose of the draft rule is to reduce local and regional NOx and DPM emissions and facilitate local and regional emission reductions associated with warehouses larger than 100,000 square feet and the mobile sources

attracted to them. Based on the implementation timeline in each of the CERPs Proposed Rule 2305 was scheduled to be considered for adoption by South Coast AQMD's Governing Board in early 2020. In response to COVID-19, public hearing dates have been delayed to allow more time to work with stakeholders and to incorporate modifications to the rulemaking process. As a result, the rule is scheduled to be considered by the South Coast AQMD Governing Board in the first quarter of 2021.

The CERPs also include a regulatory strategy to develop an indirect source rule (ISR) to reduce air pollution from rail yards. Based on the CERP implementation timeline, the ISR for railyards was scheduled to be considered by the South Coast AQMD Governing Board by December 2020. Also, in response to COVID-19, public hearing dates have been delayed allowing more time to work with stakeholders and to incorporate modifications to the rulemaking process. The proposed Railyard ISR is currently scheduled for consideration by the Governing Board in the second quarter of 2021.

South Coast AQMD staff continues to work with stakeholders (i.e., rail yard operators, communities, etc.) on proposed concepts for the Railyard ISR. South Coast AQMD has limited authority over locomotives and railroad activity, and any regulations it might pass will likely require federal approval before they can go into effect. With these limits in mind, South Coast AQMD is pursuing four concepts to reduce emissions from railyards, including developing an Indirect Source Rule (ISR).[9] These include:

- Reducing exposures from locomotive maintenance and service emissions
- Requiring railroads to develop zero emission infrastructure plans for railyards
- Developing new incentive programs to focus on incentivizing cleaner locomotive activity instead of cleaner locomotive purchases
- Evaluating new monitoring approaches for in-use locomotives

[9]South Coast Air Quality Management District, Railyards and Intermodal Facilities Working Group. http://www.aqmd.gov/home/air-quality/clean-air-plans/air-quality-mgt-plan/facility-based-mobile-sourcemeasures/rail-fac-wkng-grp. Accessed July 8, 2020.

Attachment A – Status of CERP Commitments

Table 1: Actions, Goals and Strategies Required from Adoption to June 2020 for WCWLB CERP Implementation

WCWLB Air Quality Priority	Actions, Goals, and Strategies Required (Adoption-June 2020)	Status
Refineries	Begin mobile air monitoring surveys, follow-up inspections (if necessary), provide quarterly updates on findings	• July 2019 – Initiated mobile air monitoring (ongoing monitoring investigations) • January 2020 – Provided updates at quarterly CSC meeting
	Provide summary of flare emissions data and number of flaring events from 2008-2018	June 2019 – Completed by providing 2008-2018 quarterly emissions report data to CSC
	Initiate rule 1118 development activities & initiate process with stakeholders on additional improvements to flaring notifications	• July 2018 - Initiated rule development activities (e.g., evaluation of scoping plans) • December 2019 – Flaring Event Notification System (FENS) web-based portal deployed (next update expected Fall 2020)
	Deploy Rule 1180 monitoring and begin evaluating results	• January 2020 – Initiated deployment of fenceline monitoring • March 2020 – Fully implemented fenceline monitoring
	Explore SMART leak detection and repair (LDAR) technology & programs	April 2020 – Initiated research for SMART LDAR
	Provide inventory of refinery equipment and state if BARCT is being considered	September 2019 – Completed by including inventory in CERP Appendix 5B
	Continue Proposed Rule 1109.1 development (site visits, vendor meetings, etc.)	• February 2018 – Rule development initiated (over a dozen working group meetings conducted) • May 2020 – Began conducting working group meetings virtually
	Hold Proposed Rule 1109.1 working group meeting in the community	• May 2020 – Working group meetings began being conducted via virtual platforms
	Initiate process to work with local public health departments to develop outreach materials for flaring	April 2020 – Collaborative discussions in initial phases

WCWLB Air Quality Priority	Actions, Goals, and Strategies Required (Adoption-June 2020)	Status
Ports	Update CSC on CARB's enforcement of Drayage Truck Regulation	Delayed – CARB Drayage truck update expected to occur in late 2020
	Engage in outreach for PRIMER initiative	June 2019 – Initiated PRIMER outreach (outreach ongoing)
	Update CSC on demonstration projects for ships and harbor craft	• June 2020 – Initial technology demonstration project contract executed (currently in planning and design phase) • June 2020 – U.S. EPA notified South Coast AQMD that it was awarded funding for another technology demonstration project (expected to begin in 2021)
	Identify additional incentives for cleaner port equipment & Drayage Trucks	May 2020 – Initiated outreach for Carl Moyer by webcast
	Participate in CARB At-Berth Regulation development	November 2019 – Completed, South Coast AQMD comment letter submitted during CARB's public process
	Engage in outreach events when incentive programs are open for application (Ships and harbor crafts)	May 2020 – Initiated outreach for Carl Moyer by webcast
	Continue Port MOU development and begin implementing aspects of Ports Clean Air Action Plan (CAAP), if feasible	• May 2018 – South Coast AQMD Governing Board directed staff to pursue a Port MOU (development is ongoing and is based on CAAP measures) • TBD – Public hearing is TBD
Neighborhood Truck Traffic	Work to establish "no truck idling" signage with locations prioritized by CSC	October 2019 – CARB and South Coast enforcement efforts initiated based on CSC input
	Plan outreach events to inform the community members how to report idling trucks	• October 2019 – Initiated outreach efforts • January 2020 – Outreach conducted at Wilmington Neighborhood Council meeting
	Work with CARB to coordinate quarterly idling sweeps for a year	• July 2019 – Initiated collaborations with CARB

WCWLB Air Quality Priority	Actions, Goals, and Strategies Required (Adoption-June 2020)	Status
		• September 2019 – South Coast enforcement staff began conducting truck idling sweeps (4 sweeps, 219 trucks inspected, 4 NOVs)
	Begin engaging in incentive outreach events and collaborating with local businesses, agencies to provide information about incentive programs, restricted truck routes, etc.	May 2020 – Initiated outreach for Carl Moyer by webcast
	Work with city or the county to evaluate potential designated truck routes and identify resources to enforce these routes and identify	• June 2019 – Initiated potential collaboration with City of Los Angeles • May 2020 – Continued discussions with City of Los Angeles regarding community plan update
	Target incentive funds for small businesses and independent owner/operator when incentive programs are available	May 2020 – Initiated outreach for Carl Moyer by webcast
Oil Drilling and Production	Use CalGEM data to identify oil well status	July 2019 – Completed and provided this information as part of CAMP
	Work with CSC to prioritize oil wells/site locations for mobile air monitoring and begin monitoring (Post data on webpage within 30 days)	• June 2019 – Mobile air monitoring initiated (ongoing monitoring investigations) • May 2020 – Staff worked with CSC to prioritize locations based on CSC input
	Work with stakeholders to identify improvements for 1148.2	• May 2020 – Staff worked with CSC to receive input • July 2020 – Staff began evaluating path to address CSC concerns and potential rule development based on CSC input
Railyards	Provide incentive info to railyards (to replace diesel equipment)	May 2020 – Initiated outreach for Carl Moyer by webcast
	Continue ISR development for railyards	• May 2017 – Initiated railyard ISR development • November 2019 – Initial concepts released in joint community workshops with CARB • Second quarter 2021 – Public hearing is expected

WCWLB Air Quality Priority	Actions, Goals, and Strategies Required (Adoption-June 2020)	Status
Schools, Childcare Centers, and Homes - Exposure Reduction	Begin working with local health departments on outreach materials for air quality advisories	April 2020 – Collaborative discussions in initial phases
	Install new air filtration systems and extend replacement filters at schools with existing systems	• January 2020 – Prioritized schools for air filtration systems installation • April 2020 – Submitted CAPP incentive fund request for school air filtration • May 2020 – Updated CSC and provided WCWLB school prioritization list • Second quarter 2020 – CARB approved CAPP incentive request for school air filtration installation
	Outreach with community-based organizations and to school districts to provide air quality related programs	• February 2020 – WHAM outreach at Carson High School • May 2020 – Staff began working with CBOs for collaborative educational outreach for schools
	Outreach to school districts for info on safe routes/ridesharing	Delayed due to COVID-19

Table 2: Actions, Goals and Strategies Required from Adoption to June 2020 for SBM CERP Implementation

SBM Air Quality Priority	Actions, Goals, and Strategies Required (Adoption-June 2020)	Status
Neighborhood Truck Traffic	Engage and/or organize outreach event(s) for reporting idling trucks and incentive programs	October 2019 – Initiated plans for outreach events (delayed due to COVID-19)
	Conduct quarterly truck idling sweeps	• July 2019 – Initiated collaborations with CARB • September 2019 - South Coast enforcement staff began conducting truck idling sweeps (4 sweeps, 61 trucks inspected, 2 NOVs)
	Develop CARB regulations and Indirect Source Rules (ISR), and the Automated License Plate Reader policy, and truck routes, and establish designated parking areas	• August 2019 - ALPR privacy policy in progress • November 2019 - Proposed Rule 2305 (Warehouse ISR) preliminary draft rule language released • First quarter 2021 – Warehouse ISR public hearing expected
	Identify additional incentive funding	May 2020 – Initiated outreach for Carl Moyer by webcast
Warehouses	Continue Indirect Source Rules (ISR) develop and collaborate on local standard approaches for warehouse development	• May 2017 – Initiated developing Warehouse ISR • November 2019 - Proposed Rule 2305 (Warehouse ISR) preliminary draft rule language released • First quarter 2021 – Warehouse ISR public hearing expected
	Hold a public meeting in the Inland Empire to discuss proposed ISR for warehouses	Delayed due to COVID-19
	Conduct outreach to support installation of zero-emission infrastructure and equipment	June 2019 – Initiated collaboration with SCE for warehouse zero emission infrastructure outreach
Omnitrans	Conduct air measurements	• June to December 2019 – Individual air measurements taken (monitoring investigations are ongoing)

SBM Air Quality Priority	Actions, Goals, and Strategies Required (Adoption-June 2020)	Status
		• October 2019 – Provided monitoring updates to CSC
	Support Omnitrans's efforts to transition to zero-emission buses	• May 2019 – Provided letter of support for federal transit authority grant • March 2020 – Provided letter of support for grant proposal
Railyards (On-site Emissions)	Conduct air measurements	• June 2019 – Initiated mobile air monitoring (monitoring investigations are ongoing) • October 2019 – Provided monitoring updates at CSC meeting
	Consider CARB regulations and continue ISR development, and support new national locomotive standards	• May 2017 – Initiated railyard ISR development • November 2019 – Initial concepts released • Second quarter 2021 - Public hearing is expected
	Hold a public meeting in the Inland Empire on ISR for railyards	December 2019 - Joint public meeting conducted with CARB in San Bernardino
	Work to replace railyard equipment with cleaner technologies	May 2020 – Initiated outreach for Carl Moyer by webcast
Concrete Batch, Asphalt Batch, and Rock and Aggregate Plants	Conduct air monitoring; if needed, follow-up with investigations	• June 2019 – Mobile air monitoring initiated (Enforcement inspections were conducted to ensure compliance in 2019) • October 2019 – Provided monitoring updates at CSC meeting
	Conduct public outreach event on rules and complaint process	September 2019 – Began initial discussions with CSC members regarding possible dates or locations for public outreach events
Schools, Childcare Centers, Community Centers, and Homes – Exposure Reduction	Provide air quality related programs to schools or information on programs and partner with local entities and community-based organizations	• November 2019 – Began organizing WHAM events • December 2019 – Three SBM schools included in WHAM program

SBM Air Quality Priority	Actions, Goals, and Strategies Required (Adoption-June 2020)	Status
		• May 2020 – Provided information on Safe Routes Partnership at quarterly CSC meeting
	Develop outreach materials with the Department of Public Health	May 2019 – Initiated collaborative discussions during CERP development (implementation in initial phases)
	Conduct school-based air monitoring	Second quarter 2020 – Began working with CSC to establish a community sensor network (CSC chose homes instead of school-based monitoring)
	Install air filtration systems at schools	• January 2020 – Prioritized schools for air filtration systems installation • April 2020 – Submitted CAPP incentive fund request for school air filtration • May 2020 – Updated CSC and provided SBM school prioritization list • Second quarter 2020 – CARB approved CAPP incentive request for school air filtration installation
	Seek opportunities for tree planting, residential air filtration systems, and replacing school buses	April 2020 – Began efforts to identify funding for tree planting, residential air filtration systems, and school bus replacements

Table 3: Actions, Goals and Strategies Required from Adoption to June 2020 for ELABHWC CERP Implementation

ELABHWC Air Quality Priority	Actions, Goals, and Strategies Required (Adoption-June 2020)	Status
Neighborhood and Freeway Traffic from Trucks and Automobiles	Begin mobile air measurements and provide quarterly updates to the CSC on air monitoring activities	• June 2019 – Mobile air measurements initiated (ongoing monitoring investigations) • 2019 – Provided monitoring updates at quarterly CSC meeting
	Begin conducting incentive outreach events and provide quarterly or biannual updates to the CSC	May 2020 – Initiated outreach for Carl Moyer by webcast
	Work with CARB to coordinate quarterly idling sweeps for a year	• July 2019 – Initiated collaborations with CARB • October 2019 - South Coast enforcement staff began conducting idling sweeps (4 sweeps, 114 trucks inspected, 1 NOV)
	Work with local cities and county to address signage for truck idling, prioritizing locations identified by the CSC	May 2020 – Initiated outreach for Carl Moyer by webcast
	Work with CARB and community to prioritize locations for ALPR and PEAQs systems	August 2019 - ALPR policy development initiated
	Begin public outreach events to provide information to the community about cleaner technologies and provide updates to the CSC	February 2020 – Outreach meetings scheduled but delayed due to COVID-19
Railyards (On-site Emissions)	Conduct air measurements at railyards and nearby communities and provide updates to CSC	• June 2019 – Mobile air monitoring initiated (ongoing monitoring investigations) • October 2019 – Provided monitoring updates at CSC meetings

ELABHWC Air Quality Priority	Actions, Goals, and Strategies Required (Adoption-June 2020)	Status
	Provide incentive information to railyards to work towards replacing diesel-fueled equipment with cleaner technologies	May 2020 – Initiated outreach for Carl Moyer by webcast
	Continue ISR development for railyards	• May 2017 – Initiated railyard ISR development • November 2019 – Initial concepts released • Joint public meeting conducted with CARB in East Los Angeles • Second quarter 2021 - Public hearing is expected
Metal Processing Facilities	Begin mobile air measurements near metal processing facilities that have been identified as potential concerns and provide quarterly updates to the CSC	• July 2019 – Mobile air monitoring initiated (ongoing monitoring investigations) • November 2019 – Enforcement efforts driven by air monitoring findings (3 NC) • May 2020 – Provided enforcement investigation update at quarterly CSC meeting
	Provide updates to CSC on public outreach events and incentive opportunities	• April 2020 – South Coast AQMD submitted CAPP funds request for control or conversion projects • Second quarter 2020 – CARB approved CAPP incentive request for control conversion projects
Rendering Facilities	Begin outreach to provide information on Rule 415 requirements	Delayed due to COVID-19
	Begin mobile air measurements for VOCs near rendering facilities	• June 2019 – Mobile air monitoring initiated (ongoing monitoring investigations, enforcement efforts driven

ELABHWC Air Quality Priority	Actions, Goals, and Strategies Required (Adoption-June 2020)	Status
		by air monitoring findings/odor complaints) • December 2019 – Enforcement efforts initiated • January 2020 – Provided enforcement updates at quarterly CSC meeting
	Continue response to odor complaints and update complainants on a timely basis and facility inspections to evaluate compliance with Rule 415	• September 2019 – Enforcement efforts initiated to verify compliance at rendering facilities (e.g., rendering facility inspections, rendering related odor complaint response, enforcement action as necessary)
Auto Body Shops	Begin air monitoring near auto body shops as described in CAMP	July 2019 - Mobile air monitoring initiated (ongoing monitoring investigations)
	Conduct targeted enforcement activities, as needed	December 2019 – Enforcement efforts initiated/ongoing, including those driven by monitoring findings
Schools, Childcare Centers, Community Centers, Libraries, and Public Housing Projects – Exposure Reduction	Partner with community-based organizations on asthma-based programs	Delayed due to COVID-19
	Implement CARE and WHAM programs at schools	November 2019 to March 2020 – 11 WHAM events conducted at three schools
	Begin working with AltaMed on developing health messaging for advisories	Delayed due to COVID-19
	Install air filtration systems at schools	• January 2020 – Prioritized schools for air filtration systems installation • April 2020 – Submitted CAPP incentive fund request for school air filtration • May 2020 – Updated CSC and provided ELABHWC school prioritization list

ELABHWC Air Quality Priority	Actions, Goals, and Strategies Required (Adoption-June 2020)	Status
		• Second quarter 2020 – CARB approved CAPP incentive request for school air filtration installation
General Concerns about Industrial Facilities, including Waste Transfer Stations	Work with the CSC to identify community partners that would benefit from education on how to file an air quality complaint	Delayed due to COVID-19
	Engage in at least two outreach events in this community to provide information and training on how to file air quality complaints by phone, web, or mobile app	Delayed due to COVID-19
	Develop a list of relevant facility types for permit cross-check, and a list of common facility types for guideline development	Delayed due to COVID-19
	Conduct initial mobile air measurements to evaluate air quality in the community, identify high emitting facilities, and conduct follow-up air measurements as necessary	July 2019 - Mobile air monitoring initiated (ongoing monitoring investigations, enforcement efforts driven by air monitoring findings)
	Respond to odor complaints and conduct unannounced inspections	September 2019 – Enforcement staff continues to respond to all complaints received in ELABHWC (e.g., those alleging odors from waste transfer stations) with unannounced facility inspections conducted as needed

Attachment B - Community Air Monitoring Updates

Figure 3: Example of Community Air Monitoring Plan Progress Report for ELABHWC

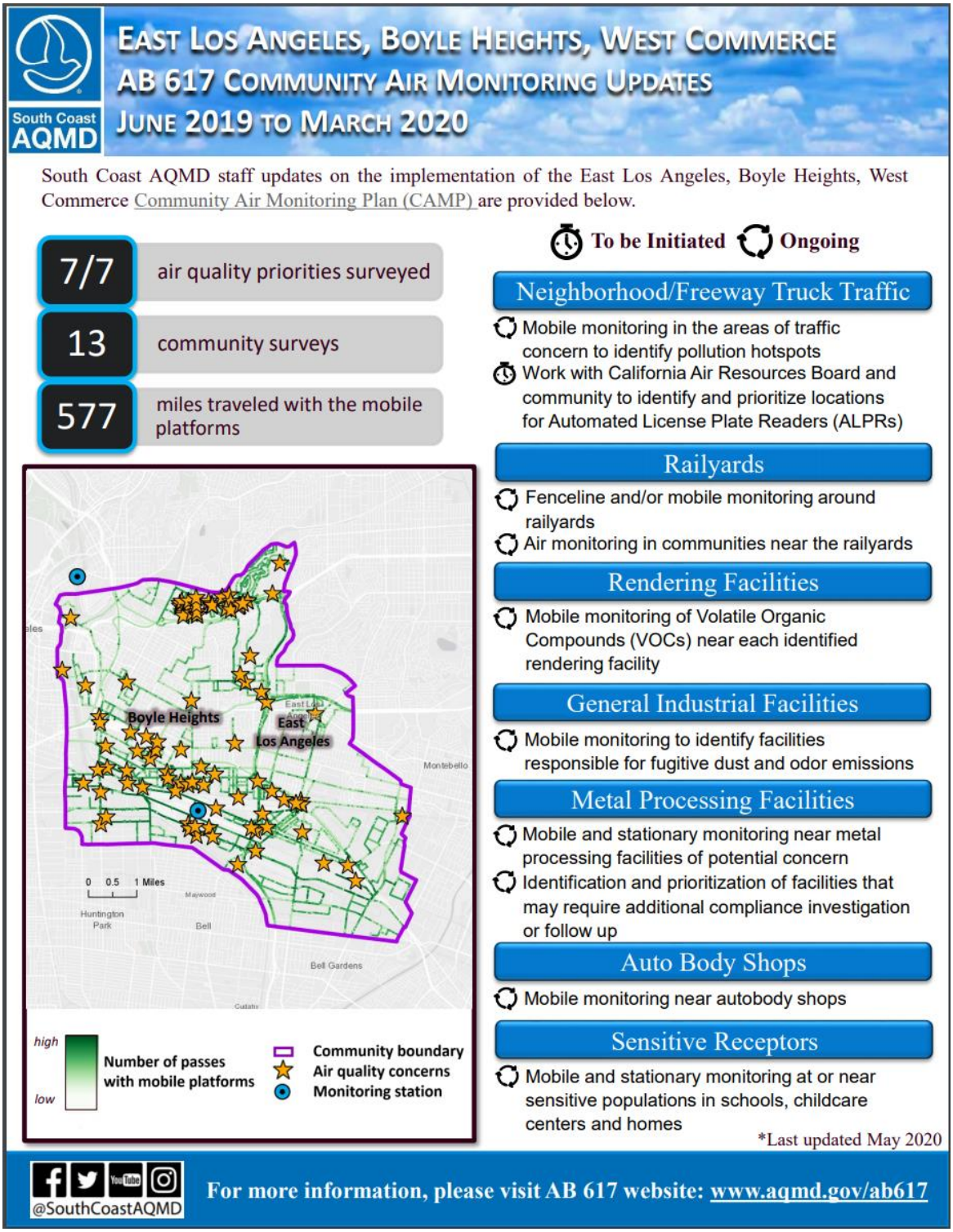


Figure 4: Example of Community Air Monitoring Plan Progress Report for SBM

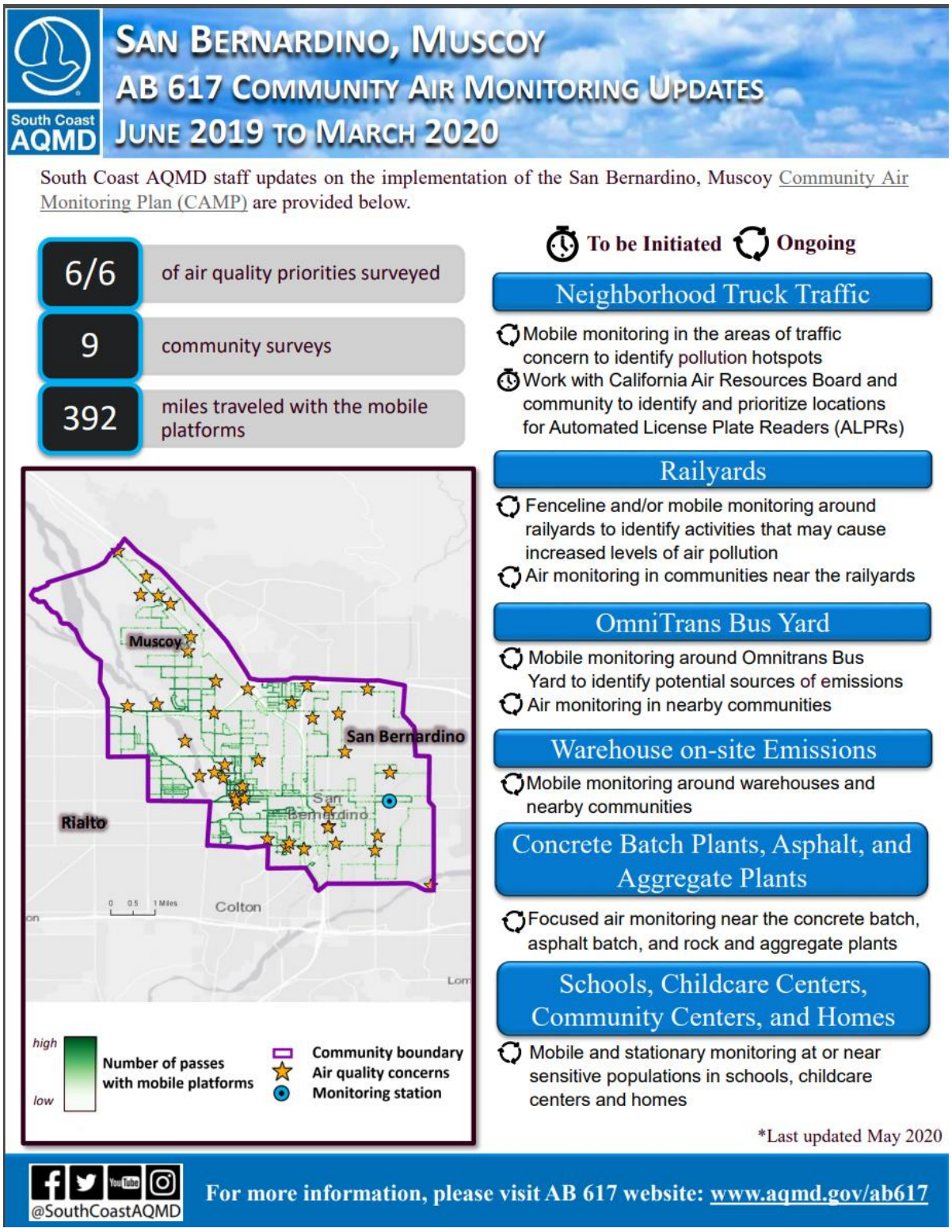
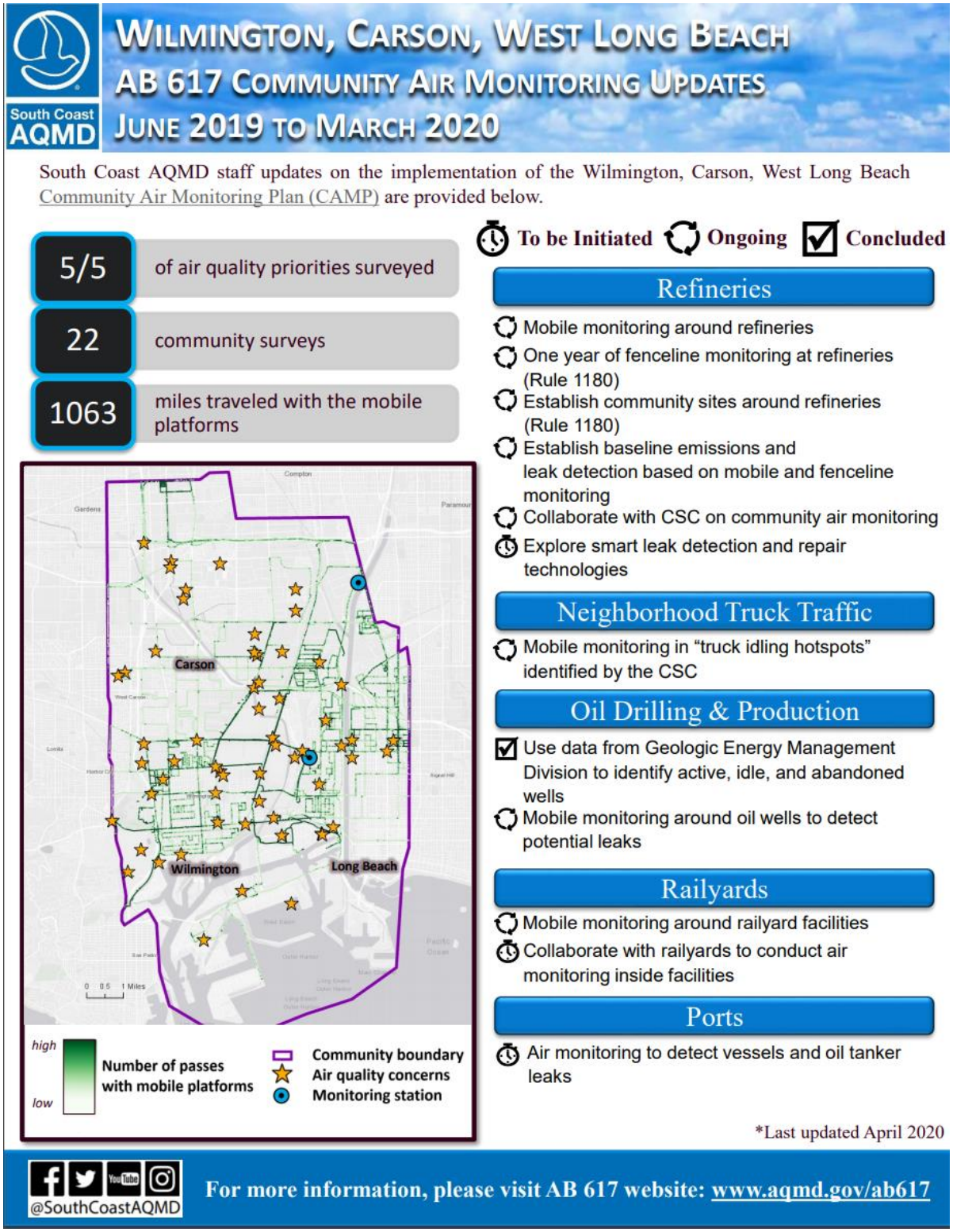


Figure 5: Example of Community Air Monitoring Plan Progress Report for WCWLB



California Oil Refinery History

Note:

- Refineries highlighted in yellow are currently operational.
- Refineries highlighted in light blue are currently idle and labeled (Idle).
- Non highlighted refineries are no longer in operation and labeled (Closed).
- Information current as of March 12, 2021.
- Contact: Media & Public Communications Office , 916-654-4989

California Refinery Facilities	Began Operations	Ownership Information	Current Crude Capacity (Barrels/Day)[1]
Anchor Refining, McKittrick Refinery (Closed)	1979	Anchor Refining: 1979-February 1984	9,000
Bridge Point Long Beach, LLC, Long Beach Refinery (Closed) Refinery to be removed and converted to commercial warehousing.	1932	Apex Oil Co: 1932-1941 Edgington Oil Co: 1941-2006 Alon USA Energy Inc: 2006-July 2017 Delek US: July 2017-July 2018 Bridge Point Long Beach, LLC: July 2018-Present	31,500
Chemoil Refining Corporation, Signal Hill Refinery (Closed)	1923	MacMillan Ring-Free Oil Co: 1923-1988 Chemoil Refining Co: 1988-April 1994	18,000

Chevron, Bakersfield Refinery (Closed)	1913	Standard Oil Co: February 22, 1913-1926 Standard Oil Company of California (Socal): 1926-1977 Chevron USA Inc: 1977-July 1986	26,000
Chevron, El Segundo Refinery	1912	Standard Oil Co: 1912-1926 Standard Oil Company of California (Socal): 1926-1977 Chevron USA Inc: 1977-2001 ChevronTexaco Corp: 2001-2005 Chevron Corp: 2005-Present	269,000
Chevron, Richmond Refinery	1902	Pacific Coast Oil: July 7, 1902-1906 Standard Oil Co: 1906-1926 Standard Oil Company of California (Socal): 1926-1977 Chevron USA Inc: 1977-2001 ChevronTexaco Corp: 2001-2005 Chevron Corp: 2005-Present	245,271
Coastal Petroleum Refiners, Inc., Bakersfield Refinery (Closed)	1980	Coastal Petroleum Refiners: 1980-December 1985	10,000
DeMenno/Kerdoon, Compton Refinery (Reprocesses Waste Oil as Oil Re-Refiner)	1977	DeMenno/Kerdoon: 1977-August 1983	15,000
Eco Petroleum, Signal Hill Refinery (Closed)	1977	ECO Petroleum: 1977-1984	10,550
Gibson Oil & Refining, Bakersfield Refinery (Closed)	1978	Gibson Oil & Refining: 1978-July 1987	9,600

Global Clean Energy Holdings, Bakersfield Refinery (Idle) - Facility to be converted to produce renewable diesel fuel with capacity of 17,000 barrels per day. Work projected to be completed by 2nd half of 2022.	1932	Mohawk Petroleum Corp: 1932-1975 Reserve Oil & Gas Co: 1975-1980 Getty Oil Co: 1980-1984 Texaco, Inc: 1984-2000 Equilon: 2000-2001 Shell Oil Co: 2001-2005 Big West of Calif. (Flying J): 2005-June 2010 Alon USA Energy Inc: June 2010-July 2017 Delek US: July 2017-May 2020 Global Clean Energy Holdings: May 2020-Present	66,000
Golden Eagle Refining, Carson Refinery (Closed)	1948	Sunset Oil: 1948-1958 Golden Eagle Refining: 1958-February 1985	16,170
Golden West Refining Company, Santa Fe Springs Refinery (Refinery Closed in March of 1992, Continued Operating as a Terminal Until 1997)	1936	Wilshire Oil Co: 1936-1960 Gulf Oil Corp USA: 1960-August 1983 Golden West Refining Co. (sub. of Thrifty Oil Co.): August 1983-March 1992	47,000
Greka Energy, Santa Maria Asphalt Refinery	1932-33	Five C Refining Co: 1932/33-1951 Douglas Oil Co: 1951-1960 Conoco: 1960-September 1981 EI du Pont de Nemours & Co (DuPont): September 1981-1994 Saba Petroleum Co: 1994-1999 Greka Energy: 1999-Present	9,500
Independent Valley Energy Company (IVEC), Bakersfield Refinery (Integrated as part of Alon USA Bakersfield Refinery)	1978	Independent Valley Energy Co: Late 1978-April 1984 Paramount Petroleum Corp.: April 1984-August 1987 Texaco: August 1987-1988 Texaco Inc: 1988 - integrated with Alon USA Bakersfield refinery	27,000

Kern Oil & Refining Company, Bakersfield Refinery	1934	El Tejon Oil & Refining Co: 1934-1943 Kreiger Oil Co: 1943-1945 Douglas Oil Co: 1945-1962 Continental Oil: 1962-1966 Edgington Oil/Signal Oil & Gas: 1966-1971 Kern County Refinery Inc. (Charter Oil Co.): 1971-1976 Kern County Refinery Inc. (Privately Held): 1976-1982 Kern Oil & Refining Co: 1982-Present	26,000
Lunday Thagard Oil Company (subsidiary of World Oil Company), South Gate Refinery	1937	Lunday Thagard Oil Co: 1937-Present	8,500
Marathon Petroleum Co., Carson Refinery	1938	Richfield Oil Corp: 1938-1966 Atlantic Richfield Company (ARCO): 1966-2000 BP West Coast Products: 2000-June 2013 Tesoro Refining & Marketing: June 2013-August 2017 Andeavor: August 2017-October 2018 Marathon Petroleum: October 2018-Present	256,830
Marathon Petroleum Co., Golden Eagle Refinery, Martinez/Avon **(Idle)** - Facility to be converted to produce renewable diesel fuel with capacity of 48,000 barrels per day by late 2023. Initial conversion to 17,000 barrels per day renewable diesel conversion work projected to be completed by late 2021 or early 2022.	1913	Associated Oil Co: 1913-1937 Tidewater Associated Oil Co: 1937-1966 Phillips Petroleum: 1966-1976 Tosco Corp: 1976-2000 Ultramar Diamond Shamrock: 2000-2002 Valero Refining Co: 2002 Tesoro Refining & Marketing: June 2013-August 2017 Andeavor: August 2017-October 2018 Marathon Petroleum: October 2018-Present	166,000

Marathon Petroleum Co., Wilmington Refinery	1923	California Petroleum Corp: 1923-1928 Texas Company: 1928-1959 Texaco, Inc: 1959-1998 Equilon Enterprises (joint venture of Shell Oil Co. & Texaco Inc.): 1998-2002 Shell Oil Co: 2002-2007 Tesoro Refining & Marketing: June 2013-August 2017 Andeavor: August 2017-October 2018 Marathon Petroleum: October 2018-Present	98,340
Pacific Refining, Hercules Refinery (Closed) Ceased refinery operations July of 1995. Continued limited storage and terminal operations until September of 1997.	1967	Sequoia Refining Corp: 1967-1968 Gulf Oil Corp USA: 1968-1976 Pacific Refining: 1976-July 1995	50,000
Pauley Petroleum Co., Newhall Refinery (Closed)	1930	San Fernando Refining Co: 1930-1942 Newhall Refining Co: 1942-February 1959 Pauley Petroleum Co: February 1959-December 1989	22,500
Pauley Petroleum Co., Wilmington Refinery (Closed)	Prior to 1951	Fletcher Oil & Refining: Prior to 1951-March 1988 Pauley Petroleum: March 1988-October 1992	29,675
PBF Energy, Martinez Refinery	1915	Shell Company of Calif: 1915-1939 Shell Oil Company, Inc: 1939-1949 Shell Oil Co: 1949-1998 Equilon Enterprises (joint venture of Shell Oil Co. & Texaco Inc.): 1998-2002 Shell Oil Co: 2002-February 2020 PBF Energy: February 2020-Present	156,400

PBF Energy, Torrance Refinery	1907	Vacuum Oil Co: 1907-1929 General Petroleum Corporation of Calif: 1929-1931 Socony-Vacuum Corp: 1931-1934 Socony-Vacuum Oil Company, Inc: 1934-1955 Socony Mobil Oil Co: 1955-1966 Mobil Oil Corp: 1966-2000 ExxonMobil: 2000-July 2016 PBF Energy: July 2016-Present	151,300
Phillips 66, Rodeo Refinery - Facility to be reconfigured to produce 800 million gallons per year of renewable diesel, renewable gasoline, and sustainable jet fuel. Production is expected to begin in 2024.	1896	Union Oil Co of Calif: 1955-1983 Unocal: 1983-1997 Tosco Corp: 1997-2001 Phillips: 2001-2002 ConocoPhillips: 2002-May 2012 Phillips 66: May 2012-Present	78,400
Phillips 66, Santa Maria Refinery	1955	Union Oil Co of Calif: 1955-1983 Unocal: 1983-1997 Tosco Corp: 1997-2001 Phillips: 2001-2002 ConocoPhillips: 2002-May 2012 Phillips 66: May 2012-Present	41,800
Phillips 66, Wilmington Refinery	1917	Union Oil Co of Calif: 1917-1983 Unocal: 1983-1997 Tosco Corp: 1997-2001 Phillips: 2001-2002 ConocoPhillips: 2002-May 2012 Phillips 66: May 2012-Present	139,000

Powerine Oil Company, Santa Fe Springs Refinery (Closed) Ceased refinery operations June of 1995. CENCO was offering the refinery equipment for sale, as of April 2007.	1934	Rothschild Oil Co/Powerine Oil Co: 1934-1984 Closed - bankruptcy: 1984-1986 Powerine Oil Co: 1986-1993 Castle Energy Corp: 1993-1995 Kenyen Resources: 1995-1996 Energy Merchant Corp: 1996-1998 Creative Energy Company (CENCO): 1998-Present	46,500
Quad Refining Company, Bakersfield Refinery (Closed)	1979	Quad Refining Co: 1979-October 1981	7,000
Road Oil Sales, Inc., Bakersfield Refinery (Closed)	1973	Road Oil Sales, Inc: 1973-December 1981	6,000
Sabre Refining, Inc., Bakersfield Refinery (Closed)	1972	Sabre Refining Co: 1972-September 1987	10,000
San Joaquin Refining Company, Bakersfield Refinery	1969	San Joaquin Refining Co: 1969-Present	15,000
Shell Oil Products US, Carson Refinery (Closed)	1923	Shell Company of Calif: 1923-1939 Shell Oil Company, Inc: 1939-1949 Shell Oil Co: 1949-1992 Converted to distribution terminal: 1992-Present	120,000
Sunland Refining Corporation, Bakersfield Refinery (Closed - Ceased Operations March 1995)	Prior to 1929	Sunland Refining Corp: Prior to 1929-December 1995	12,000
Tenby Incorporated (aka Oxnard Oil & Refining), Oxnard Refinery (Closed)	Prior to 1951	Tenby Inc: Prior to 1951-December 2011	2,800

Tosco, Bakersfield Refinery (Integrated as part of Alon USA Bakersfield Refinery)	1941	U.S. Government: 1941-1946 (Area 2) Idle 1946-1950 Norwalk Co: 1950-1950s Bankline: 1950s-1959 Signal Oil and Gas Co:1959-1970 Tosco Corp:1970-1983 Idle 1983-1986 Texaco Inc: 1986 - integrated with Alon USA Bakersfield refinery	38,800
Tricor Refining LLC, Oildale Refinery (Closed)	1938	Witco Chemical Corp: 1938-1997 Golden Bear: 1997-June 2001 Tricor Refining LLC: June 2001-January 2002	12,500
Ultramar Oil, Hanford Refinery (Closed)	1931	HH Bell Refinery Co. 1931-1932 Caminol Oil Co: 1932-1967 Beacon Oil Co: 1967-1982 Ultramar Oil Co: 1982-December 1987	17,300
USA Petrochem Corporation, Ventura Refinery (Closed)	1977	USA Petrochem Corp: 1977-December 1984	24,000
Valero, Benicia Asphalt Refinery (Part of Valero Benicia Refinery)	1982	Huntway Refining: 1982-2001 Valero Refining Co: 2001-Present	13,000
Valero, Benicia Refinery	1968	Exxon Co USA: 1968-2000 Valero Refining Co: 2000-Present	145,000
Valero, Wilmington Asphalt Refinery	1980	Huntway Refining: 1980-2001 Valero Refining Co: 2001-Present	6,300
Valero, Wilmington Refinery	1969	Champlin Petroleum Co: 1969-1987 Union Pacific Resources Co: 1987-1988 Ultramar Refining: 1988-1997 Ultramar Diamond Shamrock: 1997-2002 Valero Refining Co: 2002-Present	85,000

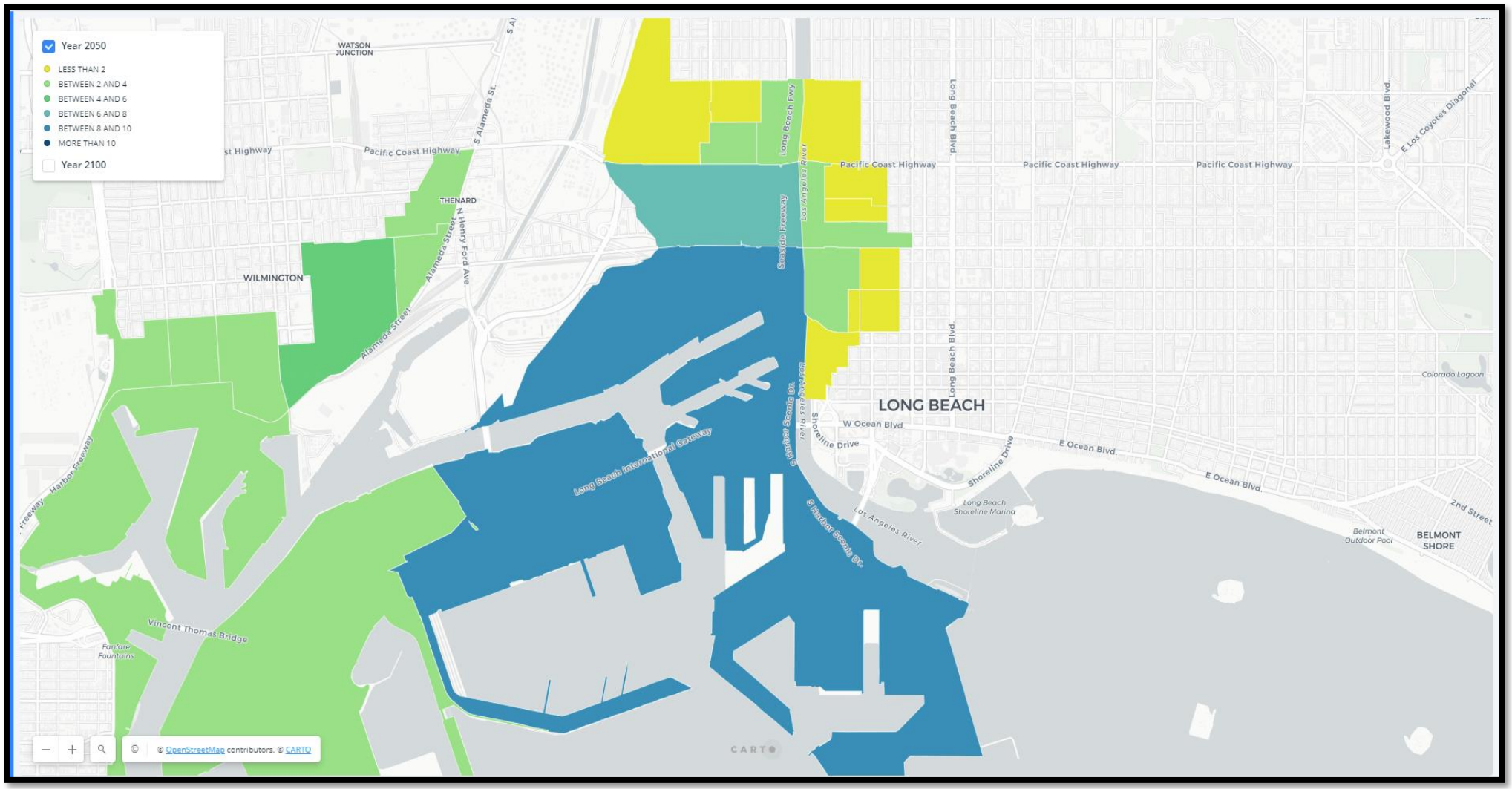
West Coast Oil Company, Oildale Refinery (Closed)	1948	West Coast Oil Co: 1948-October 1988	5,000
Western Oil & Refining, Long Beach Refinery (Closed)	1977	Marlex Oil & Refining: 1977-August 1985 Western Oil & Refining: August 1985-December 1987	19,200
World Energy, Paramount Refinery **(Idle)**	1930s	Ajax Oil Company: 1930s-1937 Kreiger Oil Co: 1937-1940s Douglas Oil Co: 1940s-1961 Continental Oil Company (Conoco): 1961-September 1981 EI du Pont de Nemours & Co: September 1981-January 1983 Pacific Oasis, Inc: January 1983-April 1984 Paramount Petroleum Corp: April 1984-2006 Alon USA Energy Inc: 2006-July 2017 Delek US: July 2017-March 2018 World Energy: March 2018-Present	50,000

Source: Compiled by California Energy Commission, Energy Assessments Division, Transportation Fuels Data Unit

Notes: 1 Atmospheric crude oil distillation processing capacity as measured in barrels per calendar day - source: Energy Information Agency - Refinery Capacity Reports

SCAQMD NOVs issued for LUNDAY-THAGARD CO DBA WORLD OIL REFINING

Notice Number	Notice Issue Date	Violation Date	Disposition Date	Disposition
L00764	9/20/1989	9/18/1989	2/11/1991	Closed Case
L05612	2/20/1991	2/14/1991	4/18/1991	Closed Case
L09931	7/27/1992	7/27/1992	4/1/1993	Closed Case
P10021	3/23/1993	3/23/1993	10/18/1993	Closed Case
P10037	7/1/1993	5/10/1993	2/24/1994	Closed Case
P10139	3/7/1994	3/7/1994	7/14/1994	Closed Case
P10145	5/2/1994	4/8/1994	12/1/1994	Closed Case
P10201	11/20/1992	11/20/1992	10/18/1993	Closed Case
P10639	5/31/2001	9/16/1998	10/16/2002	Rejected
P10908	7/7/1994	7/6/1994	4/25/1995	Closed Case
P11045	7/20/1995	7/18/1995	3/7/1996	Closed Case
P11048	8/4/1995	8/2/1995	3/7/1996	Closed Case
P11358	4/7/1998	6/27/1997	11/19/1998	Closed Case
P11844	12/3/1997	9/11/1997	5/13/1998	Closed Case
P11845	12/3/1997	9/4/1997	5/13/1998	Closed Case
P11848	1/8/1998	10/24/1987	5/13/1998	Closed Case
P11849	2/5/1998	2/3/1998	5/13/1998	Closed Case
P12122	10/13/2004	9/7/2004	5/12/2005	Closed Case
P12123	10/13/2004	9/22/2004	5/12/2005	Closed Case
P12135	1/18/2008	1/17/2008	6/16/2009	Closed Case
P34656	8/19/2009	7/24/2009	5/25/2011	Closed Case
P34657	1/29/2010	1/7/2010	5/25/2011	Closed Case
P34658	1/29/2010	6/30/2008	5/25/2011	Closed Case
P34659	2/12/2010	2/11/2010	5/25/2011	Closed Case
P34661	3/3/2010	6/30/2004	5/25/2011	Closed Case
P34662	3/3/2010	6/30/2005	5/25/2011	Closed Case
P34663	3/3/2010	6/30/2006	5/25/2011	Closed Case
P34664	3/3/2010	6/30/2007	5/25/2011	Closed Case
P34668	4/13/2010	4/8/2010	5/25/2011	Closed Case
P34669	4/16/2010	4/15/2010	5/25/2011	Closed Case
P34670	2/1/2011	11/29/2010	5/25/2011	Closed Case
P34671	2/1/2011	3/31/2010	1/18/2013	Closed Case
P34674	6/16/2011	5/26/2011	1/18/2013	Closed Case
P34685	5/24/2013	7/1/2011	1/28/2014	Closed Case
P34686	5/24/2013	5/16/2013	1/28/2014	Closed Case
P34690	1/22/2014	7/1/2012	5/4/2016	Closed Case
P39612	1/31/2008	1/29/2008	6/16/2009	Closed Case
P39615	4/24/2008	4/1/2008	6/16/2009	Closed Case
P39620	7/25/2008	7/2/2008	5/25/2011	Closed Case
P39621	7/25/2008	6/12/2008	5/25/2011	Closed Case
P39880	3/8/2006	8/9/2005	7/18/2006	Closed Case
P42631	4/10/2007	12/31/2006	6/16/2009	Closed Case
P48449	2/8/2008	1/11/2008	6/16/2009	Closed Case
P48701	2/21/2007	2/19/2007	6/16/2009	Closed Case
P48703	2/28/2007	7/1/2005	6/16/2009	Closed Case
P52786	2/27/2009	2/17/2009	5/25/2011	Closed Case
P53503	1/28/2009	1/16/2009	5/25/2011	Closed Case
P53752	11/7/2008	6/30/2008	5/25/2011	Closed Case
P53754	1/27/2009	1/9/2009	5/25/2011	Closed Case
P53758	2/27/2009	2/25/2009	5/25/2011	Closed Case
P53759	3/20/2009	3/20/2009	5/25/2011	Closed Case
P53760	3/20/2009	3/5/2009	5/25/2011	Closed Case
P61514	10/28/2015	8/11/2015	3/14/2017	Closed Case
P61515	2/3/2016	6/30/2015		
P61516	6/29/2016	1/1/2013		Void
P62071	7/15/2016	7/1/2016	3/14/2017	Closed Case
P64023	5/31/2017	1/1/2015		
P64027	8/30/2017	7/27/2017		
P64030	10/12/2017	7/1/2016		
P64032	10/12/2017	7/1/2015		
P64033	10/12/2017	1/1/2016	1/12/2018	Void
P65085	3/26/2020	7/1/2019		
P65097	6/4/2021	7/1/2019		
P65098	6/4/2021	1/1/2020		
P65396	11/28/2018	1/1/2018		
P66926	11/26/2019	7/1/2018		
P66933	11/4/2020	10/1/2019		
P66940	12/9/2021	7/1/2020		
P67803	8/8/2018	1/1/2017		
P74061	5/26/2021	7/1/2018		
P74062	5/26/2021	7/1/2020		
P74064	11/12/2021	1/1/2021		


Year 2050
LESS THAN 2
BETWEEN 2 AND 4
BETWEEN 4 AND 6
BETWEEN 6 AND 8
BETWEEN 8 AND 10
MORE THAN 10
Year 2100
WATSON JUNCTION
Pacific Coast Highway
THENARD
N Henry Ford Ave
Alameda Street
WILMINGTON
Harbor Freeway
Vincent Thomas Bridge
Fanfare Fountains
Long Beach International Gateway
Long Beach Fwy
Los Angeles River
Long Beach Blvd.
Shoreline Drive
W Ocean Blvd.
LONG BEACH
E Ocean Blvd.
Long Beach Shoreline Marina
Colorado Lagoon
Belmont Outdoor Pool
BELMONT SHORE
2nd Street
Lakewood Blvd.
E Los Coyotes Diagonal
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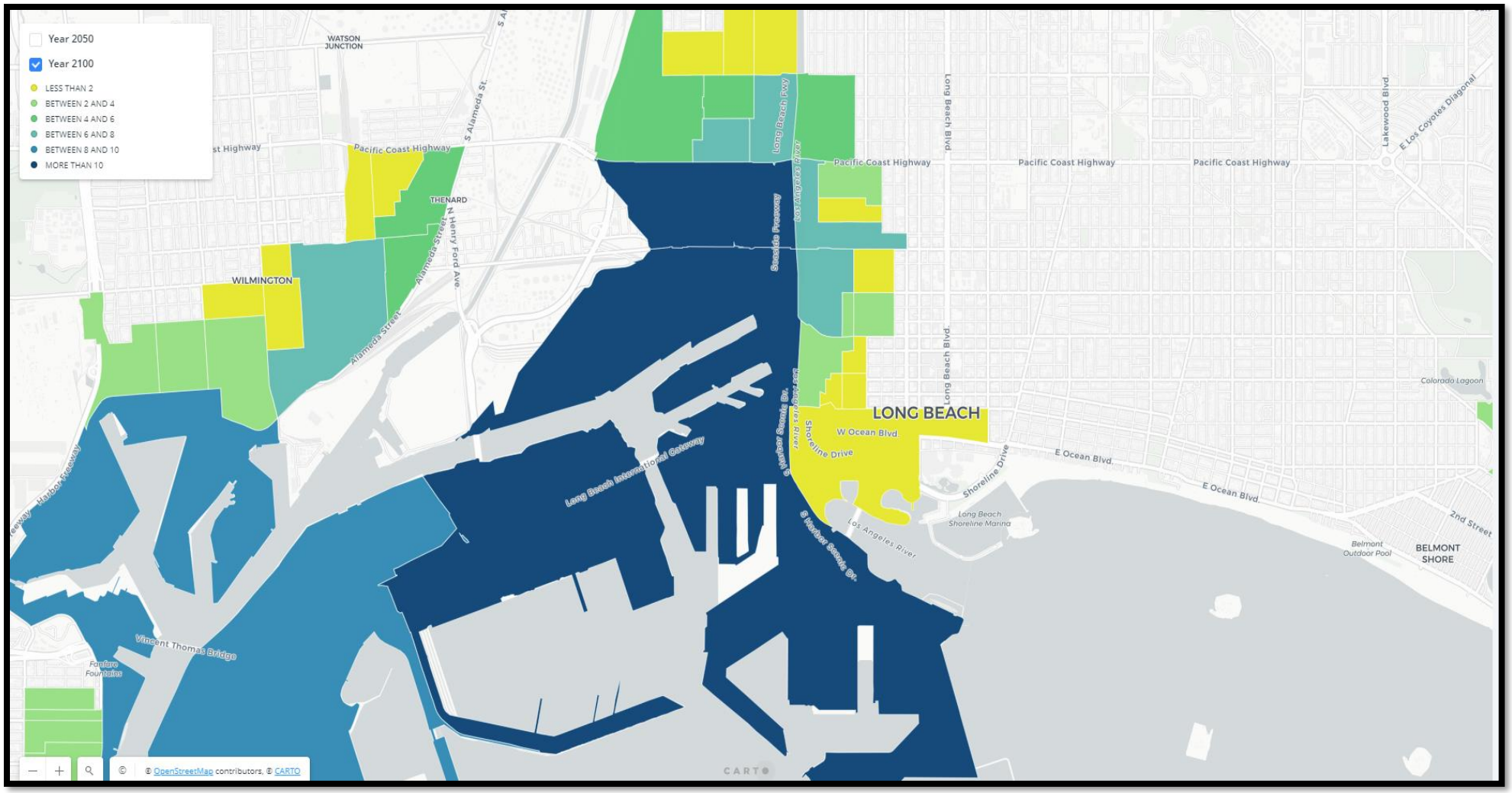
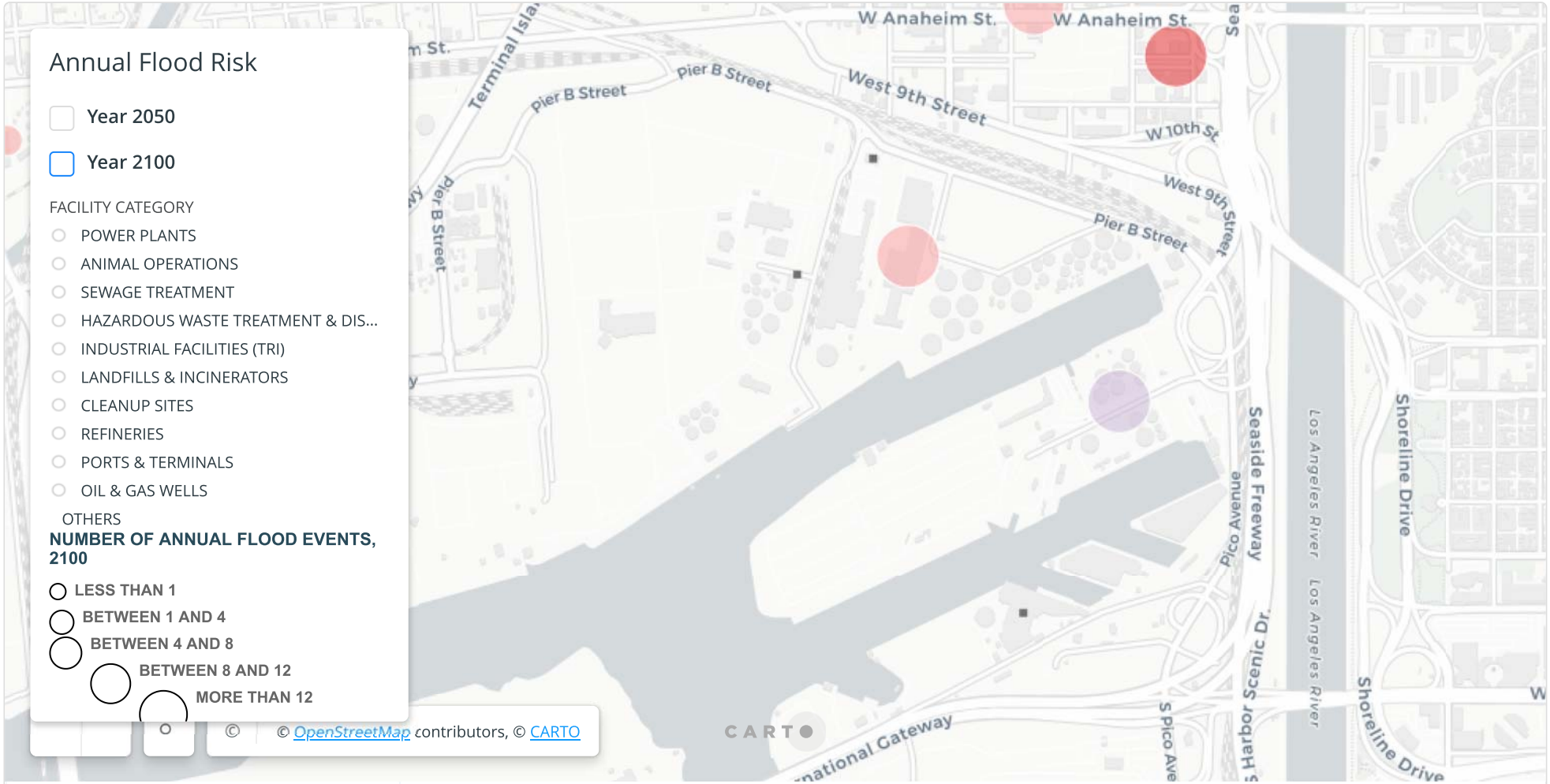
CARTO


Year 2050
Year 2100
LESS THAN 2
BETWEEN 2 AND 4
BETWEEN 4 AND 6
BETWEEN 6 AND 8
BETWEEN 8 AND 10
MORE THAN 10
WATSON JUNCTION
Pacific Coast Highway
THENARD
WILMINGTON
Alameda Street
N Henry Ford Ave
S Alameda St.
Long Beach Fwy
Los Angeles River
Long Beach Blvd
Lakewood Blvd
E Los Coyotes Diagonal
Pacific Coast Highway
Pacific Coast Highway
Pacific Coast Highway
Seaside Freeway
Los Angeles River
S Harbor Scenic Dr.
Long Beach International Gateway
Harbor Freeway
LONG BEACH
W Ocean Blvd
Shoreline Drive
E Ocean Blvd.
Shoreline Drive
E Ocean Blvd.
Long Beach Shoreline Marina
Los Angeles River
S Harbor Scenic Dr.
Colorado Lagoon
2nd Street
Belmont Outdoor Pool
BELMONT SHORE
Vincent Thomas Bridge
Fanfare Fountains
© OpenStreetMap contributors, © CARTO
CARTO



Search for category, 20...

ALL SELECTED

...	# Facilities: 1	...	# Facilities: 1

Search for category, ...

ALL SELECTED

...	# Facilities: 3	...	# Facilities: 2	...	# Facilities: 2
...	# Facilities: 1				

★ Map by yangj90

Case Studies

Richmond

Industrial history:

Richmond, CA has been a refinery town since 1901 when Chevron (then called Standard Oil) opened what is now one of the state's biggest pollution sources - the Richmond Chevron Refinery. Over the 20th century, Richmond became an industrial hub for the San Francisco Bay Area with chemical plants, factories, and World War II era shipyards, which brought a huge influx of black workers to the City. Since the 1970s, more immigrants and refugees have made Richmond their home due to its affordability, including a large Laotian population.

Over 350 toxic facilities are located in Richmond. The city is ranked among the worst in terms of pollution burden in the state, and there is community concern that these pollution sources may be associated with high rates of asthma, cancer, poor birth outcomes, and other diseases among residents. Newly arrived Laotian refugees had initially tried to garden and fish only to discover that the refinery and other industrial waste had contaminated the soil and water, making their produce and fish dangerous to consume. Grassroots advocates in Richmond, including the Laotian Organizing Project and Asian Youth Advocates, have historically organized for a better environment for their communities.

"Poor people who are affected by the crisis of pollution from the refinery need to fight for ourselves. Rich people don't care about us, that we have bad health from the pollution. If we don't fight, nobody else is going to fight for us. We want the next generation - our children and grandchildren - to have clean air so that they don't get sick and die like us now."

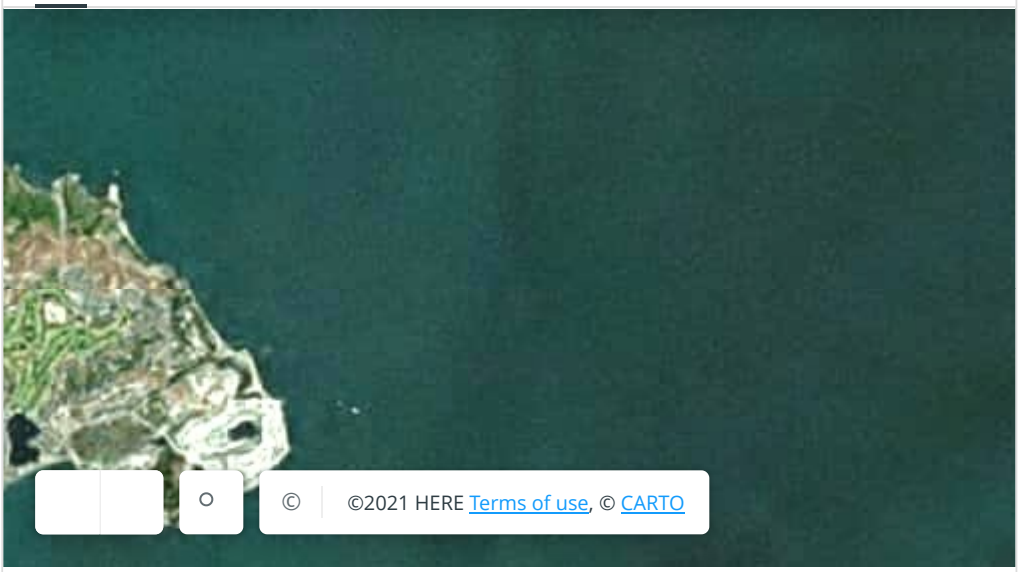
- Saeng and Lipo Chantanasak, members of the Laotian community in Richmond

Learn more about facilities at risk in Richmond.

Photo courtesy of Asian Pacific Environmental Network

Case Studies

MAP LEGENDS



Map by yangj90

Oxnard

South Oxnard is a working-class immigrant community home to many farmworker families, including indigenous communities from Southern Mexico who live alongside its industrialized coastline. Oxnard has been a center of multiracial immigrant farmworker communities since it was established in the early 20th century around a sugar factory and the labor-intensive industrial agriculture that provided its raw materials. South Oxnard was largely developed during and after World War II, with two naval bases and the Port of Hueneme, as the community boomed with new working-class housing tracts replacing farmland.

With Civil Rights Era housing desegregation and the end of the Bracero Program, many Latino families and other people of color moved into South Oxnard, which experienced “white flight” to neighboring communities like Camarillo and Ventura. During this period, affordable housing was built in South Oxnard alongside a power plant, sewage plant, paper mill, port storage facilities, and toxic waste dump, as the city government zoned the area for heavy industry.

South Oxnard continues to be home to not just environmental threats, but Southern California’s largest remaining coastal wetlands, undergoing a decades-long cleanup and restoration effort. South Oxnard residents have organized for years to remove toxic and polluting facilities from their coast, reduce pollution from industrial smokestacks and diesel truck exhaust, and restore green space for public access to the coastal wetlands of Ormond Beach.

Photo courtesy of Central Coast Alliance United for A Sustainable Economy (CAUSE)

Case Studies

MAP LEGENDS

Map by yangj90

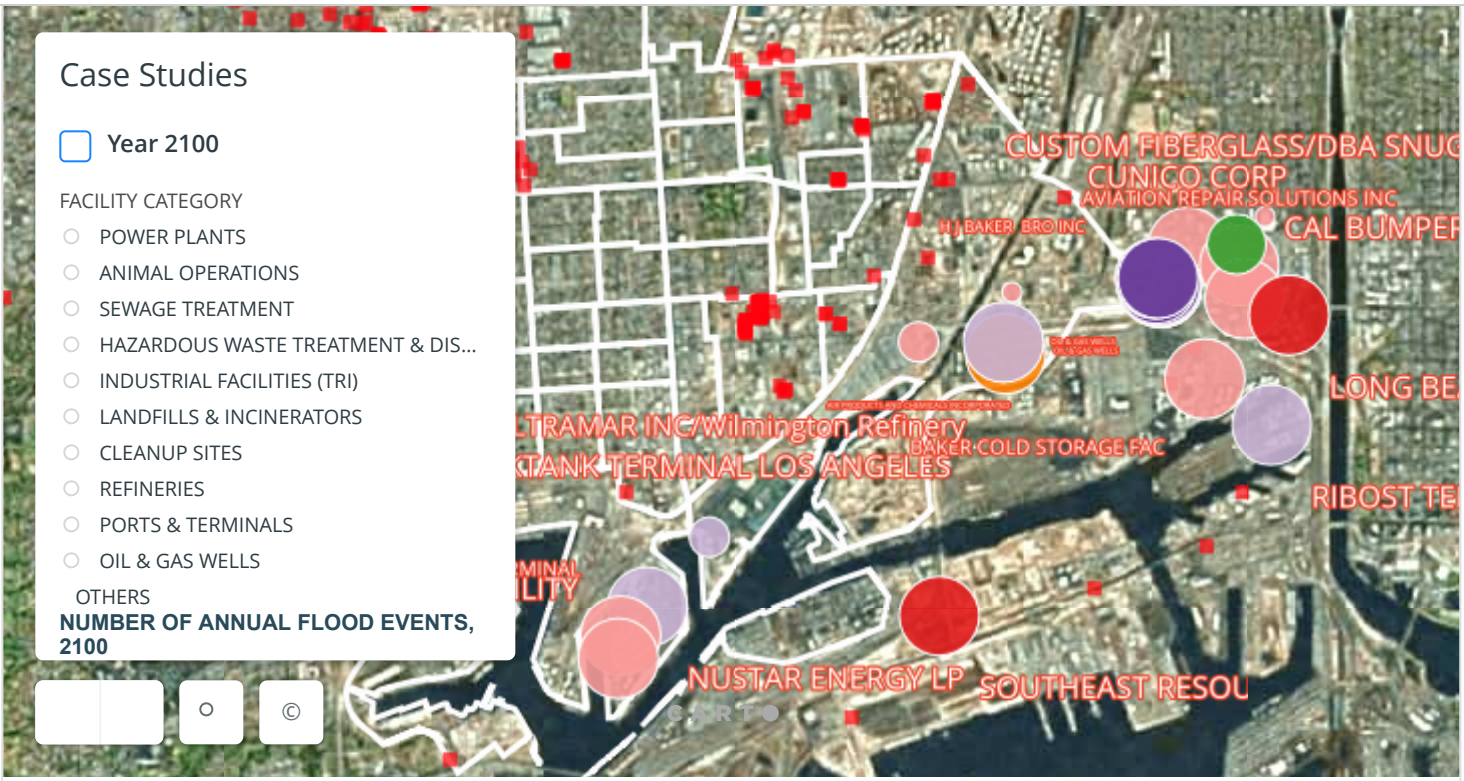
Wilmington

Early in the 20th century, three driving forces set into motion the growth and change that created the Los Angeles region of today: (1) the production and use of petroleum, (2) the import and use of water, and (3) a rapidly expanding transportation network. After the discovery of oil near today's Dodger Stadium at a depth of only 460 feet, discoveries of other oil fields quickly followed, including in the community of Wilmington, which hosts about half of the City of Los Angeles' active oil wells. Various methods of extraction are used across Los Angeles; however, the "steam injection" method, which extracts heavier and dirtier crude oil, is used solely in the Wilmington area.

These heavy oil production activities bring a major cost to Wilmington residents, 99% of whom are people of color, and many of whom live in poverty. The oil drilling, extraction, and development in Wilmington have led to higher rates of chronic diseases such as asthma, heart disease, and low birth weight, and residents living near oil wells routinely report dizziness, nosebleeds, and headaches. These same communities also often suffer from the cumulative effects of poverty, lack of access to adequate health care, and illnesses that can leave individuals more vulnerable to the toxic effects of pollution.

Wilmington also finds itself adjacent to the ports of Los Angeles and Long Beach. Beyond oil extraction, there is a vast network of facilities supporting the chain of oil production, transport, refining, and distribution, all of which contribute to the disproportionate adverse effects on the community of Wilmington.

Photo courtesy of [Physicians for Social Responsibility - Los Angeles]



Map by yangj90

TOXIC TIDES

Sea Level Rise, Hazardous Sites, and Environmental Justice in California

PROJECT BACKGROUND

Over three feet of sea level rise (SLR) are expected by the end of the century if little is done to slow climate change.

In California, the areas projected to experience flooding events by 2100 are home to **145,000 residents**, as well as at least **440 hazardous facilities** including power plants, refineries, industrial facilities, and hazardous waste sites. SLR poses risks for such facilities experiencing flooding events that can potentially **expose nearby residents to hazardous pollutants.**

Because many of these facilities are **disproportionately located in poor communities and communities of color**, climate resilience strategies must address the disproportionate impacts of SLR and associated flooding threats faced by environmental justice communities.

Although prior research in California has focused on the risks of SLR to property, little work has holistically examined its **environmental health and social equity implications statewide.** With an adequate understanding of the intersection of SLR, hazardous facilities, and environmental justice, **targeted action can prevent the most adverse impacts.**

KEY OUTCOMES & FINDINGS

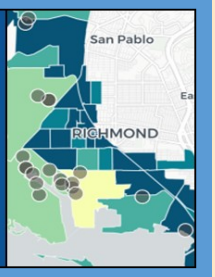
Created by Fatemah Manji from Noun Project

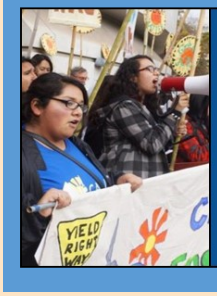
Disadvantaged communities[1] are **over 5 times more likely**[2] to live within 1km of one or more facilities at risk of flooding in 2050, and **over 6 times in 2100.**

PROJECT GOALS

Characterize the threats posed by sea level rise and the flooding of hazardous sites to socially disadvantaged populations

Create an online mapping tool that visually depicts toxic facilities at risk of flooding due to SLR and associated socioeconomic conditions





Share findings with advocates and decision-makers in order to protect vulnerable communities through current and emerging climate resilience policies

The Toxic Tides website includes a series of maps showing hazardous facilities projected to be at risk of flooding in the years 2050 and 2100, as well as demographic information of the communities nearby.

Case studies of environmental justice communities are also highlighted.

1. Communities with CalEnviroScreen 4.0 scores in the top 25th percentile as designated by the CalEPA
2. Compared to the general population

Our analysis also found that:

Out of a total of 10,544 hazardous facilities in low lying coastal areas, at least **440 are projected to be at risk of one or more flood events per year by 2100.**[1]

The majority of at-risk facilities are in 5 counties: **Alameda, Orange, San Mateo, Los Angeles, and Contra Costa.**

POLICY APPLICATIONS

This project seeks to promote resiliency of vulnerable communities that may be impacted by SLR through:

- Supporting **equitable implementation** of state agency climate resilience and adaptation programs already underway and coming down the pipeline;
- Shaping **local and regional coastal planning** efforts to address risks posed by SLR;
- Informing the state's approach to **defining "vulnerable communities"**, to guide emerging climate resilience legislation or executive orders;
- Advancing **community advocacy efforts** by depicting priority SLR risks and providing information about potential solutions and programs to address relevant risk.

COLLABORATIVE PARTNERSHIP MODEL

Toxic Tides is a collaborative effort among **community-based organizations** and **academic researchers.**

Community advocates participated in an advisory committee to provide **iterative guidance and feedback to researchers,** including overall study design, development of measures and indicators, data analysis, usability of the online mapping tool, and dissemination strategy.

Community-Based Partners:

- Asian Pacific Environmental Network
- Central Coast Alliance for a Sustainable Economy
- Physicians for Social Responsibility - Los Angeles
- Public Health Institute
- WE ACT for Environmental Justice

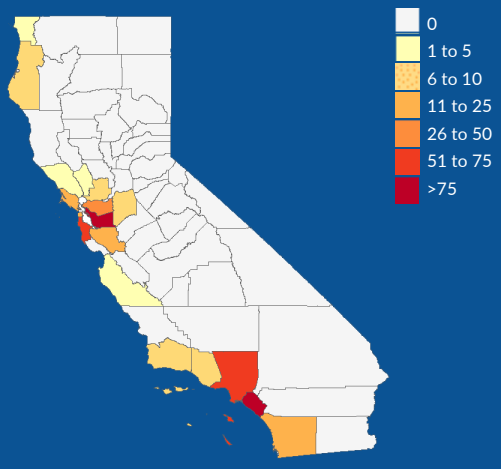
Research Team:

- UC Berkeley Sustainability and Health Equity Lab
- UC Los Angeles, Fielding School of Public Health
- Climate Central

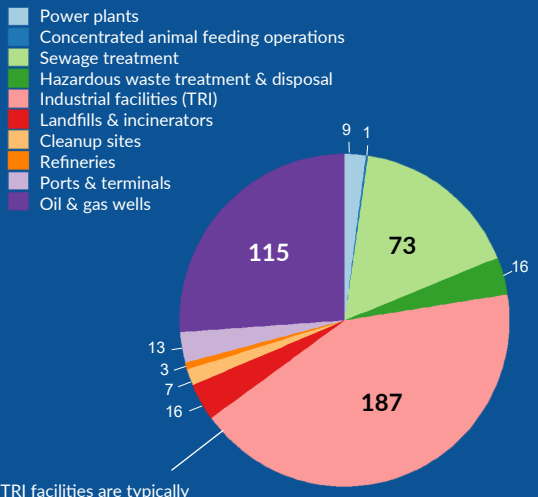
To learn more and explore the interactive maps and case studies, visit **sites.google.com/berkeley.edu/toxictides**

PROJECTED NUMBER OF FACILITIES AT RISK OF FLOODING DUE TO SLR IN 2100 UNDER HIGH EMISSIONS SCENARIO (RCP 8.5)

By County:

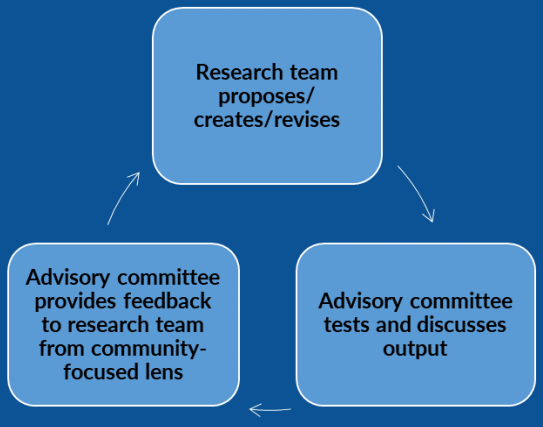


By Facility Type:



TRI facilities are typically involved in manufacturing, metal mining, electric power generation, chemical manufacturing and hazardous waste treatment. They report emissions to US EPA, and make, process or use large quantities of toxic substances.

Iterative Feedback Process:



1. Under a high greenhouse gas emissions scenario (RCP 8.5)

Maps & Data

This map series shows the risk of flood exposure at hazardous facilities under a high greenhouse gas emission scenario (RCP8.5) in California in the years 2050 and 2100. Facilities included in these maps are those located in counties with low-lying land. A facility is considered at risk of flooding if a quarter of its elevation (25th percentile) falls below the water level. Flood risk estimates are averages of multiple simulations of future sea levels.

Facility boundaries are approximated using tax parcels when available. When not available, facility boundaries are estimated using circular buffers around facility addressees. Buffers vary based on the typical size of facilities within each category.

Facilities with less than a 1% chance of being flooded (more rare than a 100-year flood) are not considered at risk.

The categories and number of facilities included in the analysis are listed in the table below. For mapping purposes, we made these categories mutually exclusive, but some facilities may belong to more than one category.

NOTE: Facility flood risk projections are based on sea level rise, tides, and storm surge and do not include groundwater contamination due to SLR. Lack of groundwater data coupled with imprecise estimates of facility boundaries may lead to potential underestimates of the number of at-risk facilities. The facilities considered in this analysis also do not represent an exhaustive list of all potentially hazardous sites.

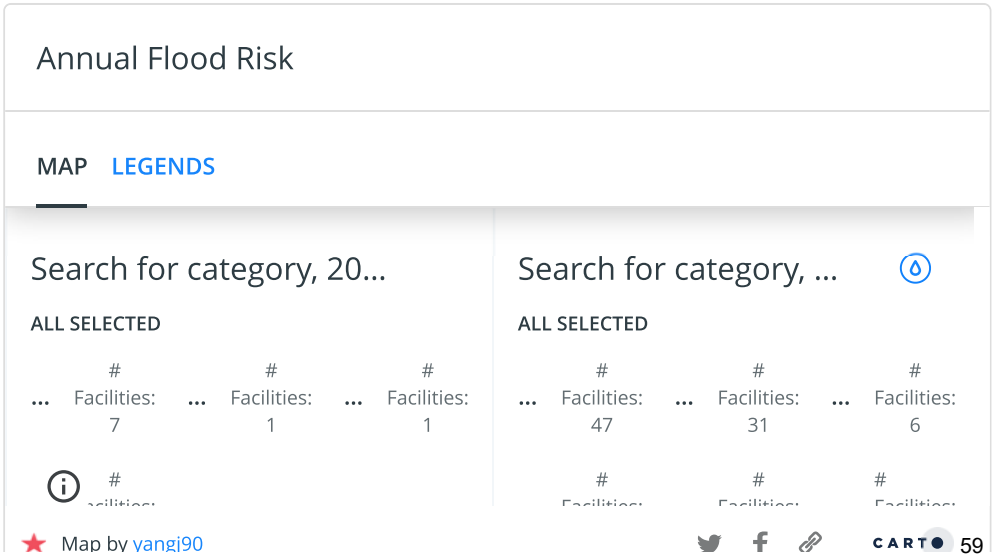
Exposed Facilities

Expected annual flood-risk events at individual facilities

Instructions: Marker size represents the expected number of times a facility will experience a flood event in the given year, and marker color represents facility categories. Use the left box to choose between target years of 2050 and 2100. Use the right box to present certain facility categories. The right box also shows the number of facilities by category within the current map extent. Click on the three dots next to the title in the right box to show the options for a target year. **Use category names in the spreadsheet above or in the left box (e.g. power plant). Do not use specific facility names when searching.**

Clicking on a facility provides more detailed information, including the number of people living within a 1 km buffer of the facility and a link to more details about the facility, when available.

To open the map in a new tab, click here.



Census block groups with at-risk facilities within 1 km buffer

Instructions: For each census block group, the map displays the number of facilities, all categories combined that have at least a 1% chance of flooding (100-year flood) in the given year, within a 1 km buffer from residential parcels in the block group. The impacted population is the sum of the population of impacted residential parcels in the given year. Population estimates are based on the 2017 American Community Survey (ACS) 5-year estimates.

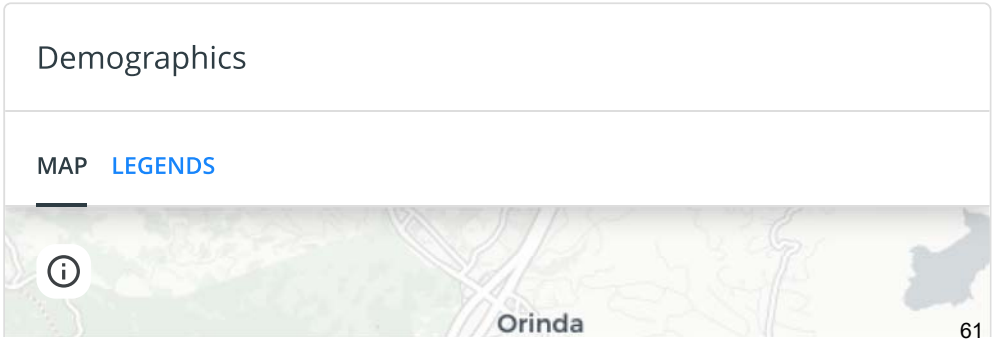
To open the map in a new tab, click here.

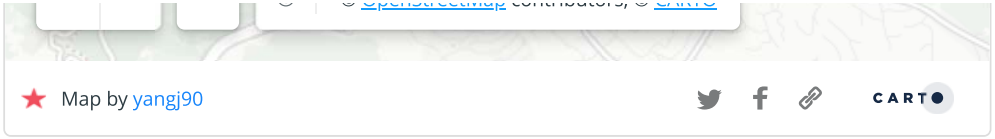
Demographics of census block groups with at least one at-risk facility within 1 km by the year 2100

Instructions: For each census block group, the map displays demographic information based on 2017 American Community Survey (ACS) 5-year estimates and the Statewide Database. Impacted population is the sum of the population of impacted parcels assuming no change in population growth by 2100. Average in the legend is the mean for demographic indicators for those block groups with at least one facility at risk in 2100.

Note that only one demographic variable can be displayed on the map at a time.

To open the map in a new tab, click here.





Map by yangj90

Demographic comparisons between block groups with and without at-risk facilities

Summary statistics

ECHO Enforcement and Compliance History Online

Detailed Facility Report

Facility Summary

LUNDAY-THAGARD CO
9301 SOUTH GARFIELD AVENUE, SOUTH GATE, CA 90280

FRS (Facility Registry Service) ID: 110001187144
EPA Region: 09
Latitude: 33.946295
Longitude: -118.16704
Locational Data Source: TRIS
Industries: Petroleum and Coal Products Manufacturing
Indian Country: N

Enforcement and Compliance Summary

Statute	CAA
Insp (5 Years)	4
Date of Last Inspection	11/24/2020
Current Compliance Status	**High Priority Violation**
Qtrs with NC (of 12)	12
Qtrs with Significant Violation	12
Informal Enforcement Actions (5 years)	--
Formal Enforcement Actions (5 years)	--
Penalties from Formal Enforcement Actions (5 years)	--
EPA Cases (5 years)	--
Penalties from EPA Cases (5 years)	--
Statute	CWA
Insp (5 Years)	--
Date of Last Inspection	--
Current Compliance Status	**No Violation Identified**
Qtrs with NC (of 12)	0
Qtrs with Significant Violation	0
Informal Enforcement Actions (5 years)	--
Formal Enforcement Actions (5 years)	--
Penalties from Formal Enforcement Actions (5 years)	--
EPA Cases (5 years)	--
Penalties from EPA Cases (5 years)	--

Statute	RCRA
Insp (5 Years)	4
Date of Last Inspection	06/25/2021
Current Compliance Status	**No Violation Identified**
Qtrs with NC (of 12)	1
Qtrs with Significant Violation	0
Informal Enforcement Actions (5 years)	4
Formal Enforcement Actions (5 years)	--
Penalties from Formal Enforcement Actions (5 years)	--
EPA Cases (5 years)	--
Penalties from EPA Cases (5 years)	--

Regulatory Information

Clean Air Act (CAA): Permanently Closed Major (CASCA0000603700043)
Clean Water Act (CWA): Minor, (CAP000078), Minor, Permit Expired (CAZ189100)
Resource Conservation and Recovery Act (RCRA): Active LQG (CAD008345464)
Safe Drinking Water Act (SDWA): No Information

Other Regulatory Reports

Air Emissions Inventory (EIS): 5797411
Greenhouse Gas Emissions (eGGRT): 1002286
Toxic Releases (TRI): 90280LNDYT9301S
Compliance and Emissions Data Reporting Interface (CEDRI): CEDRI122269

Known Data Problems

Facility/System Characteristics

Facility/System Characteristics

System	Statute	Identifier	Universe	Status	Areas	Permit Expiration Date	Indian Country	Latitude	Longitude
FRS		110001187144					N	33.946295	-118.16704
ICIS		3000030455					N	33.946295	-118.16704
ICIS		3000037327					N	33.946295	-118.16704
ICIS		30257					N	33.945056	-118.166071
ICIS-Air	CAA	CASCA0000603700043	Major Emissions	Permanently Closed			N	33.946306	-118.167028
CEDRI	CAA	CEDRI122269					N		
EIS	CAA	5797411					N	33.94421	-118.16613
GHGRP	CAA	1002286	Supplier, Direct Emitter	Subject	General Stationary Fuel Combustion, Petroleum Refining, Petroleum Product Supply		N		
RMP	CAA	100000212566		ACTIVE			N	33.946295	-118.16704
ICIS-NPDES	CWA	CAP000078	Minor: Unpermitted Facility				N	33.945056	-118.166071
ICIS-NPDES	CWA	CAZ189100	Minor: General Permit Covered Facility	Expired	Industrial Stormwater	06/30/2020	N	33.94606	-118.166
TRI	EP313	90280LNDYT9301S	Toxics Release Inventory	Last Reported for 2020			N	33.946295	-118.16704
RCRAInfo	RCRA	CAD008345464	LQG	Active (H)			N	33.946186	-118.165782
TSCA	TSCA	TSCA10040794					N	33.946295	-118.16704

Facility Address

System	Statute	Identifier	Facility Name	Facility Address	Facility County
FRS		110001187144	LUNDAY-THAGARD CO	9301 SOUTH GARFIELD AVENUE, SOUTH GATE, CA 90280	Los Angeles County
ICIS		3000030455	LUNDAY-THAGARD CO	9301 SOUTH GARFIELD AVENUE, SOUTH GATE, CA 90280	Los Angeles County
ICIS		3000037327	LUNDAY-THAGARD CO	9301 SOUTH GARFIELD AVENUE, SOUTH GATE, CA 90280	Los Angeles County
ICIS		30257	LUNDAY THAGARD OIL	9301 S GARFIELD, SOUTH GATE, CA 90280	Los Angeles County
ICIS-Air	CAA	CASCA0000603700043	LUNDAY-THAGARD COMPANY	9301 S GARFIELD, SOUTH GATE, CA 90280	Los Angeles County
CEDRI	CAA	CEDRI122269	LUNDAY-THAGARD OIL CO	9301 GARFIELD AVENUE, SOUTH GATE, CA 90280	Los Angeles County
EIS	CAA	5797411	LUNDAY-THAGARD CO DBA WORLD OIL REFINING	9301 GARFIELD AVE, SOUTH GATE, CA 90280	Los Angeles County
GHGRP	CAA	1002286	LUNDAY-THAGARD COMPANY	9301 SOUTH GARFIELD AVENUE, SOUTH GATE, CA 90280	Los Angeles County
RMP	CAA	100000212566	LUNDAY THAGARD COMPANY	9301 GARFIELD AVENUE, SOUTH GATE, CA 90280	Los Angeles County
ICIS-NPDES	CWA	CAP000078	SOUTH GATE	9302 GARFIELD AVE, SOUTH GATE, CA 90280	Los Angeles County
ICIS-NPDES	CWA	CAZ189100	LUNDAY THAGARD COMPANY DBA WORLD OIL REFINING	9301 GARFIELD, SOUTH GATE, CA 90280	Los Angeles County
TRI	EP313	90280LNDYT9301S	LUNDAY-THAGARD CO DBA WORLD OIL REFINING	9301 GARFIELD AVE, SOUTH GATE, CA 90280	Los Angeles County
RCRAInfo	RCRA	CAD008345464	LUNDAY-THAGARD COMPANY DBA WORLD OIL REFINING	9302 GARFIELD AVENUE, SOUTH GATE, CA 90280-0000	Los Angeles County
TSCA	TSCA	TSCA10040794	LUNDAY-THAGARD CO	9301 SOUTH GARFIELD AVENUE, SOUTH GATE, CA 90280	Los Angeles County

Facility SIC (Standard Industrial Classification) Codes

System	Identifier	SIC Code	SIC Description
TRI	90280LNDYT9301S	2661	Legacy Docket Conv
TRI	90280LNDYT9301S	2911	Petroleum Refining
TRI	90280LNDYT9301S	2952	Asphalt Felts And Coatings
ICIS-Air	CASCA0000603700043	2911	Petroleum Refining
ICIS-NPDES	CAZ189100	2911	Petroleum Refining
NPDES	CAZ189100	2911	Petroleum Refining

Facility NAICS (North American Industry Classification System) Codes

System	Identifier	NAICS Code	NAICS Description
RMP	100000212566	32411	Petroleum Refineries
GHGRP	1002286	324110	Petroleum Refineries
EIS	5797411	324122	Asphalt Shingle and Coating Materials Manufacturing
TRI	90280LNDYT9301S	324110	Petroleum Refineries
RCRAInfo	CAD008345464	324110	Petroleum Refineries
ICIS-Air	CASCA0000603700043	324110	Petroleum Refineries

Facility Industrial Effluent Guidelines

Identifier	Effluent Guideline (40 CFR Part)	Effluent Guideline Description
No data records returned		

Facility Tribe Information

Reservation Name	Tribe Name	EPA Tribal ID	Distance to Tribe (miles)
No data records returned			

Enforcement and Compliance

Compliance Monitoring History (5 years)

Statute	Source ID	System	Activity Type	Compliance Monitoring Type	Lead Agency	Date	Finding (if applicable)
CAA	CASCA0000603700043	ICIS-Air	Inspection/Evaluation	FCE On-Site	Local	11/24/2020	
CAA	*CASCA0000603700043*	*ICIS-Air*	*Inspection/Evaluation*	*PCE Off-Site*	*Local*	*11/02/2020*	
CAA	*CASCA0000603700043*	*ICIS-Air*	*Inspection/Evaluation*	*PCE On-Site*	*Local*	*09/22/2020*	
CAA	*CASCA0000603700043*	*ICIS-Air*	*Inspection/Evaluation*	*PCE Title V CCR*	*Local*	*08/05/2020*	*Reviewed: 01/21/2021 Facility Reported Deviations*
CAA	*CASCA0000603700043*	*ICIS-Air*	*Inspection/Evaluation*	*PCE Stack Test*	*Local*	*03/24/2020*	*Findings: Pass*
CAA	*CASCA0000603700043*	*ICIS-Air*	*Inspection/Evaluation*	*PCE Stack Test*	*Local*	*12/11/2019*	*Findings: Pass*
CAA	*CASCA0000603700043*	*ICIS-Air*	*Inspection/Evaluation*	*PCE Stack Test*	*Local*	*12/10/2019*	*Findings: Pass*
CAA	*CASCA0000603700043*	*ICIS-Air*	*Inspection/Evaluation*	*PCE Stack Test*	*Local*	*12/06/2019*	*Findings: Pass*
CAA	*CASCA0000603700043*	*ICIS-Air*	*Inspection/Evaluation*	*PCE Stack Test*	*Local*	*12/03/2019*	*Findings: Pass*
CAA	*CASCA0000603700043*	*ICIS-Air*	*Inspection/Evaluation*	*PCE Off-Site*	*Local*	*11/27/2019*	
CAA	*CASCA0000603700043*	*ICIS-Air*	*Inspection/Evaluation*	*PCE On-Site*	*Local*	*09/17/2019*	
CAA	*CASCA0000603700043*	*ICIS-Air*	*Inspection/Evaluation*	*PCE On-Site*	*Local*	*09/17/2019*	
CAA	CASCA0000603700043	ICIS-Air	Inspection/Evaluation	FCE On-Site	Local	09/17/2019	

Statute	Source ID	System	Activity Type	Compliance Monitoring Type	Lead Agency	Date	Finding (if applicable)
CAA	*CASCA0000603700043*	*ICIS-Air*	*Inspection/Evaluation*	*PCE Title V CCR*	*Local*	*08/23/2019*	*Reviewed: 11/22/2019 Facility Reported Deviations*
CAA	*CASCA0000603700043*	*ICIS-Air*	*Inspection/Evaluation*	*PCE On-Site*	*Local*	*08/21/2019*	
CAA	*CASCA0000603700043*	*ICIS-Air*	*Inspection/Evaluation*	*PCE On-Site*	*Local*	*08/15/2019*	
CAA	*CASCA0000603700043*	*ICIS-Air*	*Inspection/Evaluation*	*PCE Stack Test*	*Local*	*12/22/2018*	*Findings: Pending*
CAA	*CASCA0000603700043*	*ICIS-Air*	*Inspection/Evaluation*	*PCE On-Site*	*Local*	*12/19/2018*	
CAA	CASCA0000603700043	ICIS-Air	Inspection/Evaluation	FCE On-Site	Local	11/28/2018	
CAA	*CASCA0000603700043*	*ICIS-Air*	*Inspection/Evaluation*	*PCE Stack Test*	*Local*	*11/15/2018*	*Findings: Pending*
CAA	*CASCA0000603700043*	*ICIS-Air*	*Inspection/Evaluation*	*PCE Title V CCR*	*Local*	*08/22/2018*	*Reviewed: 09/28/2018 Facility Reported Deviations*
CAA	*CASCA0000603700043*	*ICIS-Air*	*Inspection/Evaluation*	*PCE On-Site*	*Local*	*06/21/2018*	
CAA	*CASCA0000603700043*	*ICIS-Air*	*Inspection/Evaluation*	*PCE Stack Test*	*Local*	*10/27/2017*	*Findings: Pass*
CAA	*CASCA0000603700043*	*ICIS-Air*	*Inspection/Evaluation*	*PCE Stack Test*	*Local*	*10/25/2017*	*Findings: Pass*
CAA	CASCA0000603700043	ICIS-Air	Inspection/Evaluation	FCE On-Site	Local	09/27/2017	
CAA	*CASCA0000603700043*	*ICIS-Air*	*Inspection/Evaluation*	*PCE On-Site*	*Local*	*07/27/2017*	
RCRA	CAD008345464	RCRAInfo		COMPLIANCE EVALUATION INSPECTION ON-SITE	State	06/25/2021	Violations Or Compliance Issues Were Found
RCRA	CAD008345464	RCRAInfo		COMPLIANCE EVALUATION INSPECTION ON-SITE	State	05/17/2021	No Violations Or Compliance Issues Were Found
RCRA	CAD008345464	RCRAInfo		COMPLIANCE EVALUATION INSPECTION ON-SITE	State	11/28/2017	No Violations Or Compliance Issues Were Found
RCRA	CAD008345464	RCRAInfo		COMPLIANCE EVALUATION INSPECTION ON-SITE	State	06/13/2017	Violations Or Compliance Issues Were Found

Entries in italics are not counted in EPA compliance monitoring strategies or annual results.

Compliance Summary Data

Statute	Source ID	Current SNC (Significant Noncompliance)/HPV (High Priority Violation)	Current As Of	Qtrs with NC (Noncompliance) (of 12)	Data Last Refreshed
CAA	CASCA0000603700043	Yes	01/01/2022	12	12/31/2021
CWA	CAP000078	No	09/30/2021	0	12/31/2021
CWA	CAZ189100	No	09/30/2021	0	12/31/2021
RCRA	CAD008345464	No	01/01/2022	1	12/31/2021

Three-Year Compliance History by Quarter

Statute	Program/Pollutant/Violation Type				QTR 1	QTR 2	QTR 3	QTR 4	QTR 5	QTR 6	QTR 7	QTR 8	QTR 9	QTR 10	QTR 11	QTR 12+
CAA (Source ID: CASCA0000603700043)					01/01-03/31/19	04/01-06/30/19	07/01-09/30/19	10/01-12/31/19	01/01-03/31/20	04/01-06/30/20	07/01-09/30/20	10/01-12/31/20	01/01-03/31/21	04/01-06/30/21	07/01-09/30/21	10/01-12/31/21
	Facility-Level Status				**High Priority Violation**	**High Priority Violation**	**High Priority Violation**	**High Priority Violation**	**High Priority Violation**	**High Priority Violation**	**High Priority Violation**	**High Priority Violation**	**High Priority Violation**	**High Priority Violation**	**High Priority Violation**	**High Priority Violation**
	HPV History				Unaddressed-Local	Unaddressed-Local	Unaddressed-Local	Unaddressed-Local	Unaddressed-Local	Unaddressed-Local	Unaddressed-Local	Unaddressed-Local	Unaddressed-Local	Unaddressed-Local	Unaddressed-Local	Unaddressed-Local
	Violation Type	**Agency**	**Programs**	**Pollutants**												
CAA	HPV	CA SCA	CAASIP, CAATVP	FACIL	10/12/2012	→	→	→	→	→	→	→	→	→	→	→

Statute	Program/Pollutant/Violation Type				QTR 1	QTR 2	QTR 3	QTR 4	QTR 5	QTR 6	QTR 7	QTR 8	QTR 9	QTR 10	QTR 11	QTR 12	QTR 13+
CWA (Source ID: CAP000078)					10/01-12/31/18	01/01-03/31/19	04/01-06/30/19	07/01-09/30/19	10/01-12/31/19	01/01-03/31/20	04/01-06/30/20	07/01-09/30/20	10/01-12/31/20	01/01-03/31/21	04/01-06/30/21	07/01-09/30/21	10/01-12/31/21
	Facility-Level Status				Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Quarterly Noncompliance Report History																
CWA (Source ID: CAZ189100)					10/01-12/31/18	01/01-03/31/19	04/01-06/30/19	07/01-09/30/19	10/01-12/31/19	01/01-03/31/20	04/01-06/30/20	07/01-09/30/20	10/01-12/31/20	01/01-03/31/21	04/01-06/30/21	07/01-09/30/21	10/01-12/31/21
	Facility-Level Status				**No Violation Identified**	**No Violation Identified**	**No Violation Identified**	**No Violation Identified**	**No Violation Identified**	**No Violation Identified**	**No Violation Identified**	**No Violation Identified**	**No Violation Identified**	**No Violation Identified**	**No Violation Identified**	**No Violation Identified**	**Undetermined**
	Quarterly Noncompliance Report History																

Statute	Program/Pollutant/Violation Type		QTR 1	QTR 2	QTR 3	QTR 4	QTR 5	QTR 6	QTR 7	QTR 8	QTR 9	QTR 10	QTR 11	QTR 12+
RCRA (Source ID: CAD008345464)			01/01-03/31/19	04/01-06/30/19	07/01-09/30/19	10/01-12/31/19	01/01-03/31/20	04/01-06/30/20	07/01-09/30/20	10/01-12/31/20	01/01-03/31/21	04/01-06/30/21	07/01-09/30/21	10/01-12/31/21
	Facility-Level Status		**No Violation Identified**	**No Violation Identified**	**No Violation Identified**	**No Violation Identified**	**No Violation Identified**	**No Violation Identified**	**No Violation Identified**	**No Violation Identified**	**No Violation Identified**	**Violation Identified**	**No Violation Identified**	**No Violation Identified**
	Violation	**Agency**												
RCRA	XXS: State Statute or Regulation	CA										06/25/2021-06/25/2021		
RCRA	XXS: State Statute or Regulation	CA										06/25/2021-06/25/2021		

Informal Enforcement Actions (5 Years)

Statute	System	Source ID	Type of Action	Lead Agency	Date
RCRA	RCRAInfo	CAD008345464	INSPECTION REPORT w/VIOLATIONS (MAILED DATE)	State	07/19/2021
RCRA	RCRAInfo	CAD008345464	WRITTEN INFORMAL	State	06/25/2021
RCRA	RCRAInfo	CAD008345464	INSPECTION REPORT w/VIOLATIONS (MAILED DATE)	State	08/03/2017
RCRA	RCRAInfo	CAD008345464	WRITTEN INFORMAL	State	06/14/2017

Entries in italics are not counted as "informal enforcement actions" in EPA policies pertaining to enforcement response tools.

Formal Enforcement Actions (5 Years)

Statute	System	Law/Section	Source ID	Action Type	Case No.	Lead Agency	Case Name	Issued/Filed Date	Settlements/Actions	Settlement/Action Date	Federal Penalty Assessed	State/Local Penalty Assessed	Penalty Amount Collected	SEP Cost	Comp Action Cost
No data records returned															

Environmental Conditions

Watershed(s)

12-Digit WBD (Watershed Boundary Dataset) HUC (RAD (Reach Address Database))	WBD (Watershed Boundary Dataset) Subwatershed Name (RAD (Reach Address Database))	State Water Body Name (ICIS (Integrated Compliance Information System))	Beach Closures Within Last Year	Beach Closures Within Last Two Years	Pollutants Potentially Related to Impairment	Watershed with ESA (Endangered Species Act)-listed Aquatic Species?
180701050303	Alhambra Wash-Rio Hondo		No	No		Yes

Assessed Waters From Latest State Submission (ATTAINS)

State	Report Cycle	Assessment Unit ID	Assessment Unit Name	Water Condition	Cause Groups Impaired	Drinking Water Use	Aquatic Life	Fish Consumption Use	Recreation Use	Other Use
CA	2018	CAL4051501020111218141642	John Ford Park Lake	Unknown			Insufficient Information	Insufficient Information		
CA	2018	CAR4051501019990202112624	Rio Hondo Reach 1 (Confl. LA River to Snt Ana Fwy)	Impaired - 303(d) Listed - With Restoration Plan	METALS (OTHER THAN MERCURY) | PATHOGENS | PH/ACIDITY/CAUSTIC CONDITIONS | TOTAL TOXICS | TRASH		Not Supporting		Not Supporting	

Air Quality Nonattainment Areas

Pollutant	Within Nonattainment Status Area?	Nonattainment Status Applicable Standard(s)	Within Maintenance Status Area?	Maintenance Status Applicable Standard(s)
Ozone	Yes	1-Hour Ozone (1979); 8-Hour Ozone (1997); 8-Hour Ozone (2008); 8-Hour Ozone (2015)	No	
Lead	Yes	Lead (2008)	No	
Particulate Matter	Yes	PM-2.5 (1997); PM-2.5 (2006); PM-2.5 (2012)	Yes	PM-10 (1987)
Carbon Monoxide	No		Yes	Carbon Monoxide (1971)
Sulfur Dioxide	No		No	

Pollutants

Toxics Release Inventory History of Reported Chemicals Released in Pounds per Year at Site

Air Pollutant Report TRI Pollution Prevention Report

TRI Facility ID	Year	Total Air Emissions	Surface Water Discharges	Off-Site Transfers to POTWs (Publicly Owned Treatment Works)	Underground Injections	Releases to Land	Total On-site Releases	Total Off-site Transfers
90280LNDYT9301S	2020	724		351			724	616
90280LNDYT9301S	2019	974		368			974	570
90280LNDYT9301S	2018	1,115		252			1,115	438
90280LNDYT9301S	2017	981		188			981	473
90280LNDYT9301S	2016	1,871		241			1,871	3,062

TRI Facility ID	Year	Total Air Emissions	Surface Water Discharges	Off-Site Transfers to POTWs (Publicly Owned Treatment Works)	Underground Injections	Releases to Land	Total On-site Releases	Total Off-site Transfers
90280LNDYT9301S	2015	1,054		291			1,054	440
90280LNDYT9301S	2014	769		248			769	772
90280LNDYT9301S	2013	891	0	778			891	1,158
90280LNDYT9301S	2012	680		328			680	1,046
90280LNDYT9301S	2011	272		420		0	272	548

Toxics Release Inventory Total Releases and Transfers in Pounds by Chemical and Year

Chemical Name	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
1,2,4-Trimethylbenzene										
Ammonia										
Benzene	129	142	170	122	315	206	218	442	205	222
Benzo[g,h,i]perylene	6	4	6	24	18	17	18	16	0	0
Chlorine										
Cyclohexane	223	266	315	280	277	252	206	258	167	57
Ethylbenzene	34	59	29	44	543	32	53	38	99	18
Freon 113 (CFC-113)										
Hydrogen sulfide	101	181	202	160	148	154	102	121	94	
Lead	175	23	152	99	844	125	75	3	11	6
Mercury	8	11	9	8	8	9	7	0	0	0
Naphthalene	72	119	82	140	544	77	202	134	151	82
Polycyclic aromatic compounds	11	48	21	15	122	116	56	47	40	26
Sulfuric acid (acid aerosols including mists, vapors, gas, fog, and other airborne forms of any particle size)										
Toluene	217	250	90	103	698	78	184	478	431	273
Xylene (mixed isomers)	112	138	119	143	1,055	102	195	234	335	66
n-Hexane	252	301	357	317	361	326	226	278	193	69

Community

EJSCREEN EJ Indexes

Eleven primary environmental justice (EJ) indexes of EJSCREEN, EPA's screening tool for EJ concerns. EPA uses these indexes to identify geographic areas that may warrant further consideration or analysis for potential EJ concerns. The index values below are for the Census block group in which the facility is located. Note that use of these indexes does not designate an area as an "EJ community" or "EJ facility." EJSCREEN provides screening level indicators, not a determination of the existence or absence of EJ concerns. For more information, see the EJSCREEN home page.

Census Block Group EJ Indexes (percentile)	
Particulate Matter (PM 2.5)	73.8
Ozone	70.3
NATA Diesel PM	76.6
NATA Air Toxics Cancer Risk	72
NATA Respiratory Hazard Index (HI)	72.7
Traffic Proximity	93.9
Lead Paint Indicator	72.6
National Priority List (NPL) Site Proximity	98.8
Risk Management Plan (RMP) Site Proximity	90.7
Hazardous Waste Proximity	90.7
Wastewater Discharge Proximity	98.9

Number of EJ Indexes Above 80th Percentile
5

View EJSCREEN Report

Demographic Profile of Surrounding Area (1 Mile)

This section provides demographic information regarding the community surrounding the facility. ECHO compliance data alone are not sufficient to determine whether violations at a particular facility had negative impacts on public health or the environment. Statistics are based upon the 2010 U.S. Census and 2014 - 2018 American Community Survey (ACS) 5-year Summary and are accurate to the extent that the facility latitude and longitude listed below are correct. EPA's spatial processing methodology considers the overlap between the selected radii and the census blocks (for U.S. Census demographics) and census block groups (for ACS demographics) in determining the demographics surrounding the facility. For more detail about this methodology, see the DFR Data Dictionary.

General Statistics	
Total Persons (U.S. Census)	21,964
Population Density	7,266/sq.mi.
Percent People of Color	91%
Households in Area	6,574
Housing Units in Area	6,172
Total Persons (ACS (American Community Survey))	23,926
Households on Public Assistance	305
Persons With Low Income	10,854
Percent With Low Income	46%

Geography	
Radius of Selected Area	1 mi.
Center Latitude	33.946295
Center Longitude	-118.16704
Land Area	95%
Water Area	5%

Income Breakdown - Households (%)	
Less than $15,000	535 (8.14%)
$15,000 - $25,000	634 (9.65%)
$25,000 - $50,000	2,002 (30.47%)
$50,000 - $75,000	1,260 (19.18%)
Greater than $75,000	2,140 (32.57%)

Age Breakdown - Persons (%)	
Children 5 years and younger	1,829 (8%)
Minors 17 years and younger	6,774 (31%)
Adults 18 years and older	15,190 (69%)
Seniors 65 years and older	1,732 (8%)

Race Breakdown - Persons (%)	
White	11,554 (53%)
African-American	476 (2%)
Hispanic-Origin	18,644 (85%)
Asian/Pacific Islander	656 (3%)
American Indian	203 (1%)
Other/Multiracial	9,076 (41%)

Education Level (Persons 25 & older) - Persons (%)	
Less than 9th Grade	3,323 (22.67%)
9th through 12th Grade	1,849 (12.62%)
High School Diploma	3,850 (26.27%)
Some College/2-year	3,770 (25.72%)
B.S./B.A. (Bachelor of Science/Bachelor of Arts) or More	1,859 (12.68%)

WORLD OIL
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How We Recycle (https://worldoilcorp.com/how-we-recycle/)

For Customers (https://worldoilcorp.com/for-customers/)

Reclaim, reprocess, recycle.

We believe recycling is one of the best ways to create a cleaner world and protect our natural resources. World Oil Recycling is California's leading recycler of used motor oil and antifreeze. With over 40 years of environmental service and as the largest environmental business of our kind in the western United States, we provide vital end-to-end recycling solutions—recovering, reclaiming, processing and disposing of hazardous and contaminated waste streams including waste oil, oily water and used antifreeze.

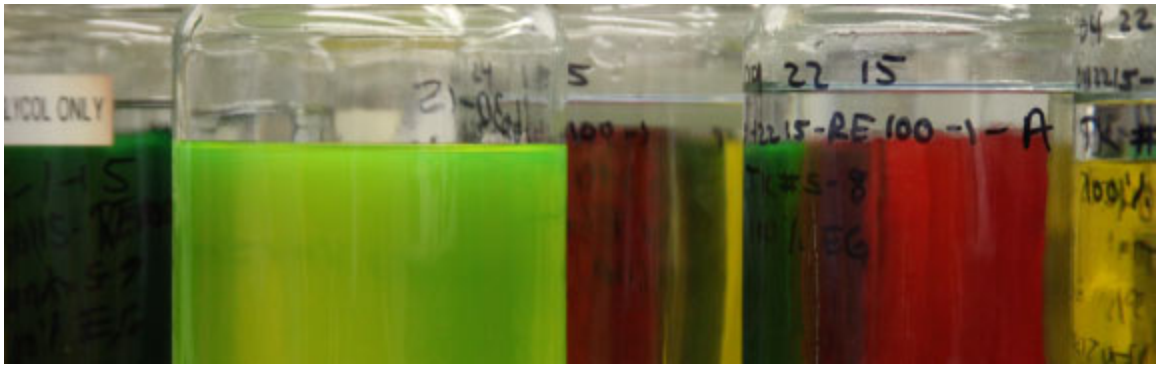
We are leading the way in conservation and sustainability by converting oil-based waste into diesel fuel and asphalt flux, and recycling used anti-freeze for conversion into new antifreeze. Our wastewater treatment standards meet and exceed the requirements set forth by the Los Angeles County Sanitation District and we were recognized as one of Compton's Best Green Businesses in 2014. And we are currently expanding our services beyond California, into AZ, NV and NM.

DeMenno/Kerdoon

DeMenno-Kerdoon is now World Oil Recycling

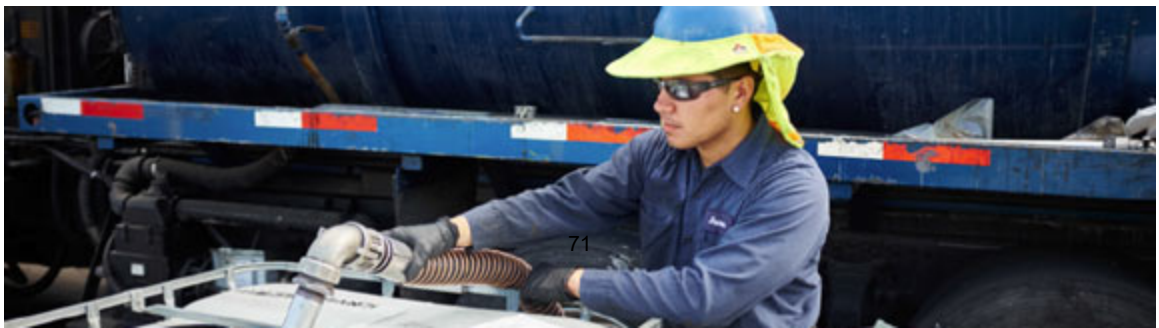
World Oil Antifreeze (https://worldoilcorp.com/WorldOil-Antifreeze/)

Trinity Antifreeze is now World Oil Antifreeze



How We Recycle (/how-we-recycle/)

We provide an end-to-end recycling solution for a variety of hazardous waste materials including used motor oil, oil filters, and antifreeze, oily-waste water, gasoline waste, and more. Learn more about how we recycle. > (/how-we-recycle/)



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WORLD OIL ENVIRONMENTAL SERVICES®

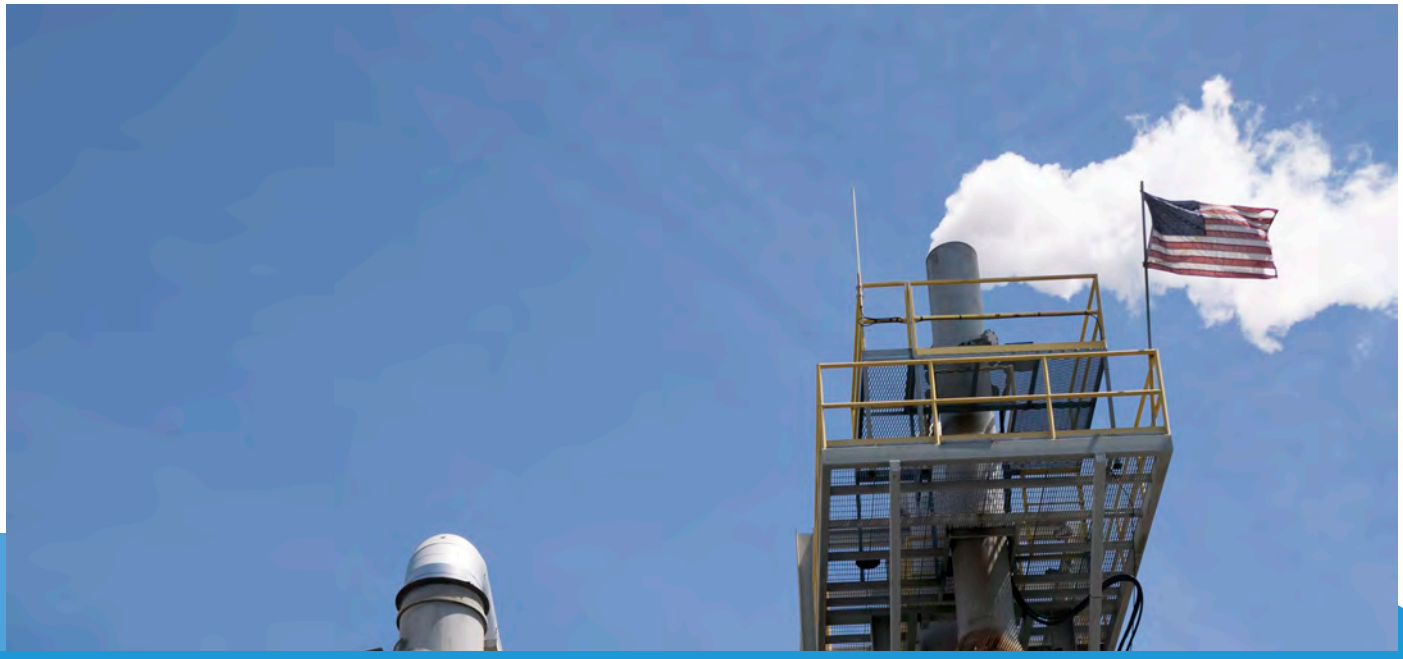
RECYCLING FOR A CLEANER ENVIRONMENT

A word from our CO-CEO's

WORLD OIL IS A HIGHLY DIVERSIFIED PETROLEUM CORPORATION

"Our father, Bernie Roth, built World Oil. He believed in doing right in everything that we do. Today, we are one of the largest, privately held companies in California. " Bob & Steve Roth

Commitment is our defining principle - to the environment, to our children's future, and to our customers. The ecological importance of the proper disposal of hazardous wastes cannot be overestimated. Although state and federal regulations have been established to control the disposal of these wastes, our earth's rivers, lakes, oceans and soils are still being contaminated every day. For over 75 years, World Oil Environmental Services has been providing companies with solutions for the proper recycling and disposal of hazardous waste materials. Working to serve our industry is at the heart of our commitment to our children and their children: clean air, clean waters, and clean soil.



"Our expertise and quality services make recycling and disposing waste or preventing storm water from contaminating our waters cost-effective as well as rewarding for our customers." - Jim Ennis, COO

The Solution You Need

World Oil Environmental Services has over seventy-five years of experience in the management and transportation of hazardous waste. We have been instrumental in the growth of our industry. Our sister company, World Oil Recycling, formerly known as DeMenno-Kerdoon, is the largest independent facility of its kind in the Western United States. A leader in both the transportion and recycling of hazardous wastes, we have decades of experience in the safe movement and processing of your hazardous wastes, offering you cradle to grave compliance.

With a network of waste oil and vacuum trucks stretching across the Southwestern United States, World Oil Environmental Services has an industry leading safety record. With over 20,000 customers, we offer your business continued compliance and uninterrupted operations.

1

FREE ON-SITE ESTIMATE

World Oil Environmental Services will bring our expertise to you.

2

WE'LL HANDLE THE PAPER WORK

FREE preparation of manifests, TSDF profiles, and land disposal restriction forms.

3

COMPETITIVE PRICING

Our affiliation with World Oil Recycling, formerly DeMenno-Kerdoon, along with other TSD facilities means World Oil Environmental Services clientele will always receive low prices.

4

CONVENIENCE

One call for all of your hazardous waste needs.

5

KNOW THAT YOUR OIL AND ANTIFREEZE ARE BEING DISPOSED OF PROPERLY

All work is performed in accordance with all applicable laws and regulations.

Why Us?

START AT THE BEGINNING...

Aligning your business with the right waste management company begins at your facility, with a review of your waste management practices. World Oil Environmental Services will come to your site to sample and profile each of your liquid waste streams, free of charge. Our detailed cost breakdown summarizes every aspect of World Oil Environmental Services from waste generation to transportation and disposal.

WORLD OIL OFFERS CRADLE TO GRAVE REGULATORY COMPLIANCE

With a network of waste oil and vacuum trucks across the Western US, and our recycling capabilities through our sister company, World Oil Recycling, World Oil Environmental Services has successfully transported and managed liquid automotive and industrial waste streams since 1936. No other company can make such a claim. No other company has more experience with more types of waste: used oil, used antifreeze, clarifier liquids, off-spec fuels, wastewaters with gasoline or diesel contamination, water soluble oils, cutting fluids, tank bottom wastes, cooling tower sludges, rinsate waters and groundwater waste streams.

YOU TAKE CARE OF BUSINESS - WE'LL TAKE CARE OF THE WASTE

Trust. Experience. Integrity. Call one of our representatives today to learn more about how your alliance with World Oil Environmental Services can translate into security for you and our environment. This remains our foremost promise since 1936.

We pick up at thousands of customers just like you.

World Oil Environmental Services will handle the transportation of your waste.

World Oil Recycling will process your used Anti-Freeze, Used Oil & Oily Water products.

World Oil Environmental Services provides a safe & cost effective solution.

LOCATIONS THROUGHOUT THE SOUTHWEST

We recycle over 3 million gallons of used antifreeze annually

60

WE RE-REFINE OVER 60 MILLION GALLONS OF USED OIL EVERY YEAR

Reclaim, Reprocess, Recycle

WE PROVIDE END-TO-END RECYCLING SOLUTIONS

We believe recycling is one of the best ways to create a cleaner world and protect our natural resources. World Oil Recycling is California's leading recycler of used motor oil and antifreeze. With over 40 years of environmental service and as the largest environmental business of our kind in the western United States, we provide vital end-to-end recycling solutions—recovering, reclaiming, processing and disposing of hazardous and contaminated waste streams including waste oil, oily water and used antifreeze.

We are leading the way in conservation and sustainability by converting oil-based waste into marine diesel fuel and asphalt flux, and recycling used anti-freeze for conversion into new antifreeze.

We eliminate your liability while creating a cleaner environment. Our laboratory maintains an on site CA State Water Resources Control Board accredidation program (ELAP), which follows a stringent QA/QC program. Our lab is also equipped with sophisticated equipment run by highly trained chemists, allowing us toexcel at meeting the demands of numerous regulatory agenies and bring recycled products to market. Just another reason why we were recognized as Compton's Best Green Businesses in 2014. We are also currently expanding our services beyond California, into Arizonia, Nevada and New Mexico.

Doing Right, In Everything that We Do®

World Oil Recycling One Stop Solution

Recycling Oil

We are the largest used oil re-refiner in the western United States. Our plant stays open 24/7 as millions of gallons of waste oil are processed each year. 24 hr. facility & customer service, either by appointment or just show up.

Our Oil Recycing Unit (ORU) uses industry leading processes to meet stringent requirements for recycled oil products.

Recycling Water

We are the only company with both the technology and the facilities to process 100% of your oily-water waste. We use state-of-the-art technology to recycle oily water to a quality which includes less than 75 parts per million of oil and grease.

Recycling Antifreeze

You need a safe and liablity free way of handling your used antifreeze. World Oil Recycling will take your used antifreeze and re-refine it into fresh antifreeze and ethylene glycol products that meet the stringent ASTM antifreeze specifications. Its the renewable alternative that protects the environment and produces a re-refined product that equal virgin antifreeze.

Recycling Fuel

Our RCRA Fuels Unit receives and safely stores waste fuels, before shipping them to permitted recyclers or incinerators.

World Oil Recycling

We maintain the highest standard of regulatory requirements, including those of the Los Angeles County Sanitation Department, The South Coast Air Quality Management Department, and Department of Toxic Substance Control.

Let us know what type of waste materials you would like us to recycle for you. If you have any questions about the waste profile, please contact our Customer Service Team at (310) 537-7100.

www.worldoilcorp.com

WE TURN OLD ANTIFREEZE INTO TOP QUALITY PRODUCTS

World Oil's line of antifreeze is the smart choice. Our clients include nationally known quick lube and tire retailers, independent shops, dealerships for non-warrenty vehicles, major fleet and civic clients.

We have been in the recycling spent antifreeze and other industrial glycols for over 20 years. Our system incorporates a multiphase recycling process utilizing pretreatment, multistate vacuum distillation, post polishing and batch testing that ensures that the quality of our ethylene glycol meets the ASTM E-1177 standard for antifreeze grade ethylene glycol.

Our Services

1 WASTE OIL, ANTIFREEZE & OIL FILTERS

With a fleet of over 300 assets serving the Western US every day, World Oil Environmental Services has established itself as the largest waste oil and antifreeze hauler in California. Oil and antifreeze can be picked up in any quantity, in either drums or bulk, to be recycled at World Oil Recycling.

2 OILY WATER / WATER SOLUBLE OIL

We transport oily water to our sister company's recycling facility, where the oily water is processed through a complete waste water treatment system, resulting in treated water that meets stringent effluent limits of LA County Sanitation District. Our team also specializes in clarifier, sump and water tank pumping.

3 FIELD SERVICES / CONTAINERIZED WASTE

Our Field Services Department offers lab packing, field chemistry, identification, and transportation of all RCRA and non-RCRA drummed, boxed or bulked wastes.

The Field Services Department has a qualified staff of well-trained project managers and field chemists to ensure service.

4 WORLD OIL ANTIFREEZE

World Oil produces a top quality line of recycled antifreeze products. Trinity products exceed the ASTM specifications for antifreeze grade, ASTM D3306 and ASTM D6210 performance specifications for light and heavy-duty applications.

Our antifreeze is not just the equal of virgin, but environmentally friendly.

LOCATIONS

CALIFORNIA

COMPTON, CERES, CHICO, DIXON, FONTANA, FORTUNA, PARLIER, SAN DIEGO, UNION CITY

NEW MEXICO

ALBUQUERQUE

NEVADA

LAS VEGAS, RENO

ARIZONA

PHOENIX

WORLD OIL
ENVIRONMENTAL SERVICES®

1300 South Santa Fe Avenue
Compton, CA 90221
Ph: 1-800-974-4495
Fax: 310-763-5922

WWW.WORLDOILCORP.COM

How We Recycle

Each year, millions of Californians change their motor oil and perform other automobile services that produce hazardous waste. World Oil Recycling provides end-to-end recycling solutions for byproducts including used motor oil, oil filters, and antifreeze, oily-waste water, gasoline waste, and more.

So what does that mean? Here's a little more information about our recycling processes for the materials we see the most of: used oil, oily water, antifreeze/glycol, and RCRA fuels.

Recycling Oil

We are the largest used oil re-refiner in the western United States, operating 24/7 and handling millions of gallons of waste oil each year. We never stop recycling.

While some treatment facilities improperly sell or dispose of their waste oil, at World Oil, we believe in doing things right. Our Oil Recycling Unit (ORU) uses state-of-the-art processes to meet stringent requirements for recycled oil product certification, including:

- Chemical and Physical Treatment
- Atmospheric Dehydration
- Fuel Stripping

- Vacuum Distillation
- Lube Treatments

World Oil Antifreeze (https://worldoilcorp.com/WorldOil-Antifreeze/)

Trinity Antifreeze is now World Oil Antifreeze (../WorldOil-Antifreeze/)

Start Recycling (/for-customers/)

Ready to start the recycling process or find your local certified used oil center? We're here to help. > (/for-customers/)

Recycling Water

We use state-of-the art technology to recycle oily water, bringing it down to less than 75 parts per million of oil and grease. The water-treatment process includes:

- Oil, Water and Solids Separation
- pH Neutralization
- Chemical Flocculation and Demulsification
- Dissolved Air Flotation
- Volatile Organic Removal

We maintain the highest standard of regulatory requirements, including Los Angeles County Sanitation Department, permitting. We stand behind our facility and our end product, so you never have to worry about liability. We maintain stringent Health, Safety, and Environment (HSE) policies at all of our facilities. All employees and contractors must follow these policies and take any precautions necessary to protect both themselves and their colleagues. Safety is our top priority.

Recycling Antifreeze

Cars use antifreeze. Used antifreeze is hazardous and is prohibited by law and regulation from being dumped or discharged into sewers, drains, or septic systems. Recycling antifreeze not only protects the environment from contamination, it saves precious resources while offering customers a cost-effective, renewable alternative.

We recycle antifreeze (glycol) waste into re-refined antifreeze and ethylene glycol that meets stringent requirements, as well as ASTM antifreeze specifications. Our state-of-the-art recycling facility features:

- Physical/Pre-Treatment
- Chemical Treatment
- Atmospheric Distillation
- Vacuum Distillation
- Carbon Adsorption

Our new World Oil Antifreeze line of products, formerly marketed under the Trinity® Brand, is a top customer choice. Our clients include nationally known quick lube and tire retailers, independent shops, dealerships for non-warranty vehicles, major fleet and civic clients. Our products meet all current ASTM standards for antifreeze grade ethylene glycol, light duty, and heavy duty antifreeze products.

We have been recycling spent antifreeze and other industrial glycols for over 20 years. Our system incorporates a multi-phase recycling process utilizing pretreatment, multi-stage vacuum distillation, post polishing, and batch testing to ensure that the quality of the recycled ethylene glycol meets the ASTM E-1177 standard for antifreeze grade ethylene glycol. This base product has been tested by major antifreeze and oil companies and has also been approved for use by a major Detroit OEM in their factory fill and OES blends. Our line of World Oil Antifreeze formulations are supplied to us by major antifreeze manufacturers for both heavy duty and light duty OEMs. They have also been stringently tested, meeting ASTM D3306, D6210, and other OEM standards. In addition to normal product development testing, World Oil Antifreeze products have been evaluated for chemical and performance compatibilities over a wide range of engine coolant technologies from across US, Asia, and Europe using ASTM D1384, D2809, and D4340 tests.

Recycling Fuel

When it comes to disposing of RCRA fuels, including solvents, paint-related materials, contaminated used oils, and other materials unsuitable for recycling, we take great care. Our RCRA Fuels Unit receives and safely stores waste RCRA fuels before shipping them to offsite, permitted recyclers or incinerators. It’s just one more way we’re working hard to make California cleaner today, and tomorrow.

From: Faraz Rizvi [mailto:faraz.r@ccaej.org]
Sent: Tuesday, January 4, 2022 12:43 PM
To: CityClerk <CityClerk@longbeach.gov>
Subject: Comments on Item 26: Appeal of the Board of Harbor Commissioners' adoption of the Final Initial Study/Negative Declaration (IS/ND) for the World Oil Tank Installation Project (Project)

-EXTERNAL-

My name is Faraz Rizvi and I am a member of the Center for Community Action and Environmental Justice. I'm here to express our strong opposition to the negative declaration approach (the no impact conclusion) for the World Oil Project. The potentially significant environmental impacts from this project require robust environmental review under an environmental impact report to assess appropriate mitigation and alternatives to this project.

Continued oil storage expansion in our region is out of sync with the rhetoric of the Port and Long Beach Mayor about advancing clean technologies and addressing pollution burdens. The negative declaration for this project ignores the reality on the ground in overburdened communities and the very real harmful impacts of this expansion. The World Oil Project would have a range of harmful impacts on surrounding communities, including:

Project would add to World Oil's existing oil storage capacity of 502,000 barrels

1. Project would produce 15,000 barrels of hazardous sludge over its lifetime
2. Project would free up to 188,000 barrels of oil storage for use by nearby refineries
3. Project will emit hundreds of thousands of pounds of toxic air pollution over its lifetime
4. Project would be about half a mile from two elementary schools, parks, and neighborhoods

The Long Beach City Council must demonstrate leadership and show their commitment to impacted residents and environmental justice.

We urge the Council to require the Port to prepare an environmental impact report for this project to protect public health and safety and the environment. We urge you to stand up to this powerful industry by not allowing storage tank projects to be rubber-stamped without robust environmental review.

--
Best,

Faraz Rizvi
Special Projects Coordinator
951-850-5598
Pronouns: He/His

From: Henry Rogers [mailto:Henry@greypinegroup.com]
Sent: Tuesday, January 4, 2022 10:55 AM
To: CityClerk <CityClerk@longbeach.gov>
Cc: Mayor <Mayor@longbeach.gov>; Council District 1 <District1@longbeach.gov>; Council District 2 <District2@longbeach.gov>; Council District 4 <District4@longbeach.gov>; Council District 3 <District3@longbeach.gov>; Council District 5 <District5@longbeach.gov>; Council District 6 <District6@longbeach.gov>; Council District 8 <District8@longbeach.gov>; Council District 7 <District7@longbeach.gov>; Council District 9 <District9@longbeach.gov>
Subject: Item 26 World Oil

-EXTERNAL-

Honorable Mayor and Council,

I am writing today on behalf of **the South Bay Association of Chambers of Commerce (SBACC),** a regional association of local chambers dedicated to regional issue advocacy in the South Bay of Los Angeles County. The SBACC represents seventeen chambers of commerce from Long Beach north to Westchester. We write in support of item 26, the World Oil Tank Installation Project, on your agenda. This project will provide much-needed storage space for the blending of fuels to meet the current clean air standards and the transition to other fuels in the future, providing a cleaner, safer environment for generations to come.

Thank you in advance for your consideration and we respectfully request your approval of item 26.

Sincerely,

HENRY ROGERS

Managing Principal, Grey Pine Group

562-355-3825 | henry@greypinegroup.com

www.greypinegroup.com

January 4, 2022

Honorable Mayor and City Council

City of Long Beach

411 W. Ocean Blvd.

Long Beach, CA 90802

Dear Honorable Mayor and City Council,

On behalf of the South Bay Association of Chambers of Commerce (SBACC), we are writing in support of the agenda **item 26 World Oil Tank Installation Project.**

World Oil is a family-owned company with deep roots in Southern California. They collect, transport, and recycle used waste oil products from over 20,000 auto repair and auto servicing sites in CA, NV, AZ, and NM. At their facility in South Gate, World Oil makes asphalts for paving and roofing applications. At their terminal in the Port of Long Beach, World Oil owns and operates RIBOST Terminal.

The proposed Project will install and operate two new 25,000-barrel storage tanks at its Long Beach terminal located at **1405 Pier C Street**. The new tanks would be connected to existing utilities, including electrical lines and petroleum pipelines. With the addition of the two smaller tanks, the RIBOST Terminal Project will provide surge capacity for blending and storage of marine fuels to meet cleaner IMO 2020 standards, which will directly benefit Port tenants who use these fuels.

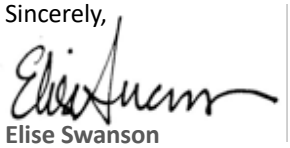
The Project's combined construction and operation emissions health risks are estimated to be well below the South Coast Air Quality Management District (SCAQMD) health risk CEQA significance thresholds.

The Final IS/ND state that the Project will not cause or contribute to any significant impacts which is why a mitigated Negative Declaration or an EIR was not needed for this small project.

The construction of these tanks will employ 70 to 90 local workers including members of the LA/OC Building Trades.

Thank you in advance for your consideration and respectfully request approval of item number 26 and its resolution to deny the appeals and uphold the Harbor Commissioners Adoption of the Final IS/ND of this important project.

Sincerely,



Elise Swanson

SBACC CHAIR

CC: Councilwoman Mary Zendejas

Councilwoman Cindy Allen

Councilwoman Suzie Price

Councilman Daryl Supernaw

Councilwoman Stacy Mungo

Councilwoman Suely Saro

Councilman Roberto Uranga

Councilman Al Austin

Vice-Mayor Rex Richardson

From: Diana Sanchez [mailto:dianas.eycej@gmail.com]
Sent: Tuesday, January 18, 2022 1:55 PM
To: CityClerk <CityClerk@longbeach.gov>
Subject: Public Comment for Agenda Item No. 20 for 1/18/22 City Council Meeting

-EXTERNAL-

Hello Board Members,

My name is Diana Sanchez and I am a member of East Yard Communities for Environmental Justice and a resident of Long Beach who grew up in South Gate, CA. I'm here to express our strong opposition to the negative declaration approach (the no impact conclusion) for the World Oil Project. This massive new oil storage facility requires robust environmental review to assess appropriate mitigation and alternatives to this project.
The negative declaration for this oil storage facility ignores the reality on the ground in overburdened communities and the very real harmful impacts of this expansion, it is unjust. The World Oil Project would have a range of harmful impacts on surrounding communities including emitting hundred of thousands of pounds of toxic air pollution. I grew up with asthma and had to get an emergency surgery to remove my tonsils because I was no longer breathing, which i'm positive is directly related to living near toxic industries.

The Long Beach City Council must demonstrate leadership and show their commitment to impacted residents and environmental justice.
I urge the Council to **require the Port to prepare an environmental impact report** for this project to protect our health and safety. I hope you have the good consciousness to stand up to this powerful industry by not allowing new oil infrastructure projects to be rubber-stamped without meaningful environmental review.

Thank you,

Diana Sanchez (She/ Ella)
Covid Organizer
http://eycej.org/

East Yard Communities for Environmental Justice

From: Robert D. Smith [mailto:robert.smith@dc36.org]
Sent: Tuesday, January 18, 2022 2:36 PM
To: Mayor <Mayor@longbeach.gov>; Council District 1 <District1@longbeach.gov>; Council District 2 <District2@longbeach.gov>; Council District 3 <District3@longbeach.gov>; Council District 4 <District4@longbeach.gov>; Council District 4 <District4@longbeach.gov>; Council District 5 <District5@longbeach.gov>; Council District 6 <District6@longbeach.gov>; Council District 7 <District7@longbeach.gov>; Council District 8 <District8@longbeach.gov>; Council District 9 <District9@longbeach.gov>; CityClerk <CityClerk@longbeach.gov>
Cc: Tony DeTrinidad <Tony.DeTrinidad@dc36.org>; Stephanie Von Slomski <stephanie.vonslomski@dc36.org>; Robert D. Smith <robert.smith@dc36.org>
Subject: World Oil Tank Installation Project - DC 36 Painters & Allied Trades Opposition Letter - Item 20

-EXTERNAL-

Good afternoon Mayor Garcia and Members of the Council, please view the attached letter regarding Item 20 - The World Oil Tank Installation Project for this evening's Agenda.

Thanks,

Robert

Painters & Allied Trades
District Council 36

Luis F. Robles
Business Manager
DRYWALL FINISHERS, FLOORLAYERS, GLAZIERS, PAINTERS, TRADESHOW & SIGNCRAFT

January 18, 2022

RE: World Oil Tank Installation Project
Item 20 22-0026

Mayor Garcia and Members of the City Council,

The Painters & Allied Trades - District Council 36 stands with the California State Building Trades Council & Safe Fuel and Energy Resources California (SAFER California) in opposition to the World Oil Tank Installation Project, due to the fact of outstanding environmental issues that are yet to be resolved.

Respectfully,

Robert Smith
Political Director
District Council 36

1155 Corporate Center Drive, Monterey Park, CA 91754 | TEL: (626) 584-9925 | FAX: (626) 584-1949

From: Sarah Wiltfong [mailto:sarah.wiltfong@bizfed.org]
Sent: Monday, January 3, 2022 3:50 PM
To: CityClerk <CityClerk@longbeach.gov>; Mayor <Mayor@longbeach.gov>
Cc: Council District 1 <District1@longbeach.gov>; Council District 2 <District2@longbeach.gov>; Council District 3 <District3@longbeach.gov>; Council District 4 <District4@longbeach.gov>; Council District 5 <District5@longbeach.gov>; Council District 6 <District6@longbeach.gov>; Council District 7 <District7@longbeach.gov>; Council District 8 <District8@longbeach.gov>; Council District 9 <District9@longbeach.gov>
Subject: BizFed Support: World Oil Tank Installation Project

-EXTERNAL-

Mayor Garcia and the Long Beach City Council Members,

Please find attached BizFed's letter of support for item 26 on the January 4th city council meeting agenda, the World Oil Tank Installation Project. This project would provide additional storage capacity at their Port facility to increase the efficiency of their terminal operations.

Thank you for your consideration. If you have any questions, please let me know.

Sincerely,

Sarah Wiltfong
310.213.8742 - sarah.wiltfong@bizfed.org
Los Angeles County Business Federation
A grassroots alliance of 215 diverse business groups mobilizing 410,000 employers - **BizFed.org**
#BusinessMakesLAWork

Don't miss our 2022 BizFed Officers Election at the 12/14 Board of Directors meeting. Click here to view the Officer Nominations Slate.

Los Angeles County Business Federation
Strengthening the Voice of Business Since 2008

1/3/2021

Mayor Robert Garcia
Long Beach City Council Members
411 E Ocean Blvd.
Long Beach, CA 90802

Via email

Subject: Agenda Item 26 - World Oil Tank Installation Project

Dear Mayor Robert Garcia and Long Beach City Council Members:

We are contacting you on behalf of BizFed, the Los Angeles County Business Federation, an alliance of over 200 business organizations with over 400,000 employers in Los Angeles County, to write in support of item 26 on the January 4 council agenda, the World Oil Tank Installation Project. This project would provide additional storage capacity at their Port facility to increase the efficiency of their terminal operations.

World Oil is principally a recycler of used oils and waste antifreeze. The company collects, transports, and recycles used waste oil products from over 20,000 auto repair and auto servicing sites in CA, NV, AZ and NM. At its facility in South Gate, World Oil makes asphalts for paving and roofing applications. Its facility at the Port has 7 tanks that store feed for the asphalt plant and leases tanks for bunker fuel.

The proposed project will add two smaller tanks to add flexibility and increase the efficiency of its operations. With the addition of the two smaller tanks, the project will be able to provide surge capacity for blending and storage of marine fuels to meet cleaner IMO 2020 standards, which will directly benefit Port tenants who use these fuels. What's more, this Project will have no significant environmental impact, will not cause or contribute to new odors, and all neighbors are approximately ½-mile from the Terminal.

As California pushes towards our clean energy goals, it is important that we support industries who help our state become more resilient by utilizing recycled materials and using already existing infrastructure to meet our economy's critical infrastructure demands. We believe adding storage capacity to the World Oil facilities is a reasonable request and is working in the best interest of California policies.

We hope that you will support this project. If you have any questions, please contact sarah.wiltfong@bizfed.org.

Sincerely

Donna Duperron
BizFed Chair
Torrance Area Chamber

David Fleming
BizFed Founding Chair

Tracy Hernandez
BizFed Founding CEO
IMPOWER, Inc.

BizFed Association Members

7-Eleven Franchise Owners Association of Southern California
Action Apartment Association
Alhambra Chamber of Commerce
American Beverage Association
American Institute of Architects - Los Angeles
Apartment Association of Greater Los Angeles
Apartment Association, CA Southern Cities, Inc.
Arcadia Association of Realtors
AREAA North Los Angeles SFV SCV
Armenian Trade and Labor Association
Associated Builders & Contractors, Inc. Southern California Chapter
Association of Club Executives
Association of Independent Commercial Producers
Azusa Chamber of Commerce
Bell Gardens Chamber of Commerce
Beverly Hills Bar Association
Beverly Hills Chamber of Commerce
Black Business Association
BNI4SUCCESS
Bowling Centers of Southern California
Boyle Heights Chamber of Commerce
Building Industry Association - Baldyview
Building Industry Association - LA/Ventura Counties
Building Industry Association - Southern California
Building Owners & Managers Association of Greater Los Angeles
Burbank Association of REALTORS
Burbank Chamber of Commerce
Business and Industry Council for Emergency Planning and Preparedness
Business Resource Group
CA Natural Resources Producers Assoc
CalAsian Chamber
Calabasas Chamber of Commerce
California Apartment Association- Los Angeles
California Asphalt Pavement Association
California Bankers Association
California Business Properties Association
California Business Roundtable
California Cannabis Industry Association
California Cleaners Association
California Construction Industry and Materials Association
California Contract Cities Association
California Fashion Association
California Gaming Association
California Grocers Association
California Hispanic Chamber
California Hotel & Lodging Association
California Independent Oil Marketers Association (CIOMA)
California Independent Petroleum Association
California Life Sciences Association
California Manufacturers & Technology Association
California Metals Coalition
California Restaurant Association
California Retailers Association
California Small Business Alliance
California Self Storage Association
California Society of CPAs - Los Angeles Chapter
California Trucking Association
Californians for Balanced Energy Solutions
Carson Chamber of Commerce
Carson Dominguez Employers Alliance
CDC Small Business Finance
Central City Association
Century City Chamber of Commerce
Cerritos Regional Chamber of Commerce
Chatsworth/Porter Ranch Chamber of Commerce
Citrus Valley Association of Realtors
Claremont Chamber of Commerce
Coalition for Renewable Natural Gas
Coalition for Small Rental Property Owners
Commercial Industrial Council/Chamber of Commerce
Construction Industry Air Quality Coalition
Construction Industry Coalition on Water Quality
Council on Trade and Investment for Filipino Americans
Covina Chamber
Crescenta Valley Chamber of Commerce
Culver City Chamber of Commerce
Downey Association of REALTORS
Downey Chamber of Commerce
Downtown Center Business Improvement District
Downtown Long Beach Alliance
El Monte/South El Monte Chamber
El Segundo Chamber of Commerce
Employers Group
Encino Chamber of Commerce
Engineering Contractor's Association
EXP
F.A.S.T.- Fixing Angelenos Stuck in Traffic
FilmLA
Friends of Hollywood Central Park
FuturePorts
Gardena Valley Chamber
Gateway to LA
Glendale Association of Realtors
Glendale Chamber
Glendora Chamber
Greater Antelope Valley AOR
Greater Bakersfield Chamber of Commerce
Greater Lakewood Chamber of Commerce
Greater Leimert Park Village Crenshaw Corridor Business Improvement District
Greater Los Angeles African American Chamber
Greater Los Angeles Association of REALTORS
Greater Los Angeles New Car Dealers Association
Greater San Fernando Valley Regional Chamber
Harbor Association of Industry and Commerce
Harbor Trucking Association
Historic Core BID of Downtown Los Angeles
Hollywood Chamber
Hong Kong Trade Development Council
Hospital Association of Southern California
Hotel Association of Los Angeles
Huntington Park Area Chamber of Commerce
Independent Cities Association
Industrial Environmental Association
Industry Business Council
Inland Empire Economic Partnership
International Cannabis Business Women Association
Irwindale Chamber of Commerce
La Cañada Flintridge Chamber
LA Fashion District BID
LA South Chamber of Commerce
Lancaster Chamber of Commerce
Larchmont Boulevard Association
Latin Business Association
Latino Food Industry Association
Latino Restaurant Association
LAX Coastal Area Chamber
League of California Cities
Long Beach Area Chamber
Long Beach Economic Partnership
Los Angeles Area Chamber
Los Angeles County Board of Real Estate
Los Angeles County Waste Management Association
Los Angeles Gateway Chamber of Commerce
Los Angeles Gay & Lesbian Chamber of Commerce
Los Angeles Latino Chamber
Los Angeles Parking Association
MADIA Tech Launch
Malibu Chamber of Commerce
Marketplace Industry Association
Motion Picture Association of America, Inc.
MoveLA
Multicultural Business Alliance
NAIOP Southern California Chapter
Nareit
National Association of Tobacco Outlets
National Association of Waterfront Employers
National Association of Women Business Owners - CA
National Association of Women Business Owners - LA
National Federation of Independent Business
National Hookah Community Association
National Latina Business Women's Association
Orange County Business Council
Pacific Merchant Shipping Association
Pacific Palisades Chamber
Panorama City Chamber of Commerce
Paramount Chamber of Commerce
Pasadena Chamber
Pasadena Foothills Association of Realtors
PhRMA
Planned Parenthood Affiliates of California
Pomona Chamber
Propel LA
Rancho Southeast Association of Realtors
ReadyNation California
Recording Industry Association of America
Regional Black Chamber-San Fernando Valley
Regional Hispanic Chamber of Commerce
Regional San Gabriel Valley Chamber
Rosemead Chamber
San Dimas Chamber of Commerce
San Gabriel Chamber of Commerce
San Gabriel Valley Economic Partnership
San Pedro Peninsula Chamber
Santa Clarita Valley Chamber
Santa Clarita Valley Economic Development Corp.
Santa Monica Chamber of Commerce
Sherman Oaks Chamber
South Bay Association of Chambers
South Bay Association of Realtors
South Gate Chamber of Commerce
Southern California Contractors Association
Southern California Golf Association
Southern California Grantmakers
Southern California Leadership Council
Southern California Minority Suppliers Development Council Inc.
Southern California Water Coalition
Southland Regional Association of Realtors
Sunland/Tujunga Chamber
Sunset Strip Business Improvement District
Torrance Area Chamber
Town Hall Los Angeles
Tri-Counties Association of Realtors
United Cannabis Business Association
United Chambers – San Fernando Valley & Region
United States-Mexico Chamber
Unmanned Autonomous Vehicle Systems Association
US Green Building Council
US Resiliency Council
Valley Economic Alliance, The
Valley Industry & Commerce Association
Vermont Slauson Economic Development Corporation
Vernon Chamber
Veterans in Business Network
Vietnamese American Chamber
Warner Center Association
West Hollywood Chamber
West Hollywood Design District
West Los Angeles Chamber
West San Gabriel Valley Association of Realtors
West Valley/Warner Center Chamber
Western Electrical Contractors Association
Western Manufactured Housing Association
Western States Petroleum Association
Westside Council of Chambers
Whittier Chamber of Commerce
Wilmington Chamber
World Trade Center

From: Sarah Wiltfong [mailto:sarah.wiltfong@bizfed.org]
Sent: Tuesday, January 18, 2022 10:02 AM
To: Mayor <Mayor@longbeach.gov>; CityClerk <CityClerk@longbeach.gov>
Cc: Council District 9 <District9@longbeach.gov>; Council District 8 <District8@longbeach.gov>; Council District 7 <District7@longbeach.gov>; Council District 6 <District6@longbeach.gov>; Council District 1 <District1@longbeach.gov>; Council District 2 <District2@longbeach.gov>; Council District 3 <District3@longbeach.gov>; Council District 4 <District4@longbeach.gov>; Council District 5 <District5@longbeach.gov>
Subject: BizFed Support Letter: World Oil Tank Installation Project

-EXTERNAL-

Mayor Garcia and the Long Beach City Councilmembers,

Please find attached BizFeds support for the World Oil Installation Project.

World Oil is principally a recycler of used oils and waste antifreeze. At its facility in South Gate, World Oil makes asphalts for paving and roofing applications. As California pushes towards our clean energy goals, it is important that we support industries who help our state become more resilient by utilizing recycled materials and using already existing infrastructure to meet our economy's critical infrastructure demands. We believe adding storage capacity to the World Oil facilities is a reasonable request and is working in the best interest of California policies.

Thank you! Please let me know if you have any questions.

Sincerely,

Sarah Wiltfong
310.213.8742 - sarah.wiltfong@bizfed.org
Los Angeles County Business Federation
A grassroots alliance of 215 diverse business groups mobilizing 410,000 employers - **BizFed.org**
#BusinessMakesLAWork

Los Angeles County Business Federation
Strengthening the Voice of Business Since 2008

1/18/2021

Mayor Robert Garcia
Long Beach City Council Members
411 E Ocean Blvd.
Long Beach, CA 90802

Via email

Subject: Agenda Item 20 - World Oil Tank Installation Project

Dear Mayor Robert Garcia and Long Beach City Council Members:

We are contacting you on behalf of BizFed, the Los Angeles County Business Federation, an alliance of over 200 business organizations with over 400,000 employers in Los Angeles County, to write in support of item 20 on the January 18 council agenda, the World Oil Tank Installation Project. This project would provide additional storage capacity at their Port facility to increase the efficiency of their terminal operations.

World Oil is principally a recycler of used oils and waste antifreeze. The company collects, transports, and recycles used waste oil products from over 20,000 auto repair and auto servicing sites in CA, NV, AZ and NM. At its facility in South Gate, World Oil makes asphalts for paving and roofing applications. Its facility at the Port has 7 tanks that store feed for the asphalt plant and leases tanks for bunker fuel.

The proposed project will add two smaller tanks to add flexibility and increase the efficiency of its operations. With the addition of the two smaller tanks, the project will be able to provide surge capacity for blending and storage of marine fuels to meet cleaner IMO 2020 standards, which will directly benefit Port tenants who use these fuels. What's more, this Project will have no significant environmental impact, will not cause or contribute to new odors, and all neighbors are approximately ½-mile from the Terminal.

As California pushes towards our clean energy goals, it is important that we support industries who help our state become more resilient by utilizing recycled materials and using already existing infrastructure to meet our economy's critical infrastructure demands. We believe adding storage capacity to the World Oil facilities is a reasonable request and is working in the best interest of California policies.

We hope that you will support this project. If you have any questions, please contact sarah.wiltfong@bizfed.org.

Sincerely

Donna Duperron
BizFed Chair
Torrance Area Chamber

David Fleming
BizFed Founding Chair

Tracy Hernandez
BizFed Founding CEO
IMPOWER, Inc.

BizFed Association Members

7-Eleven Franchise Owners Association of Southern California
Action Apartment Association
Alhambra Chamber of Commerce
American Beverage Association
American Institute of Architects - Los Angeles
Apartment Association of Greater Los Angeles
Apartment Association, CA Southern Cities, Inc.
Arcadia Association of Realtors
AREAA North Los Angeles SFV SCV
Armenian Trade and Labor Association
Associated Builders & Contractors, Inc. Southern California Chapter
Association of Club Executives
Association of Independent Commercial Producers
Azusa Chamber of Commerce
Bell Gardens Chamber of Commerce
Beverly Hills Bar Association
Beverly Hills Chamber of Commerce
Black Business Association
BNI4SUCCESS
Bowling Centers of Southern California
Boyle Heights Chamber of Commerce
Building Industry Association - Baldyview
Building Industry Association - LA/Ventura Counties
Building Industry Association - Southern California
Building Owners & Managers Association of Greater Los Angeles
Burbank Association of REALTORS
Burbank Chamber of Commerce
Business and Industry Council for Emergency Planning and Preparedness
Business Resource Group
CA Natural Resources Producers Assoc
CalAsian Chamber
Calabasas Chamber of Commerce
California Apartment Association- Los Angeles
California Asphalt Pavement Association
California Bankers Association
California Business Properties Association
California Business Roundtable
California Cannabis Industry Association
California Cleaners Association
California Construction Industry and Materials Association
California Contract Cities Association
California Fashion Association
California Gaming Association
California Grocers Association
California Hispanic Chamber
California Hotel & Lodging Association
California Independent Oil Marketers Association (CIOMA)
California Independent Petroleum Association
California Life Sciences Association
California Manufacturers & Technology Association
California Metals Coalition
California Restaurant Association
California Retailers Association
California Small Business Alliance
California Self Storage Association
California Society of CPAs - Los Angeles Chapter
California Trucking Association
Californians for Balanced Energy Solutions
Carson Chamber of Commerce
Carson Dominguez Employers Alliance
CDC Small Business Finance
Central City Association
Century City Chamber of Commerce
Cerritos Regional Chamber of Commerce
Chatsworth/Porter Ranch Chamber of Commerce
Citrus Valley Association of Realtors
Claremont Chamber of Commerce
Coalition for Renewable Natural Gas
Coalition for Small Rental Property Owners
Commercial Industrial Council/Chamber of Commerce
Construction Industry Air Quality Coalition
Construction Industry Coalition on Water Quality
Council on Trade and Investment for Filipino Americans
Covina Chamber
Crescenta Valley Chamber of Commerce
Culver City Chamber of Commerce
Downey Association of REALTORS
Downey Chamber of Commerce
Downtown Center Business Improvement District
Downtown Long Beach Alliance
El Monte/South El Monte Chamber
El Segundo Chamber of Commerce
Employers Group
Encino Chamber of Commerce
Engineering Contractor's Association
EXP
F.A.S.T.- Fixing Angelenos Stuck in Traffic
FilmLA
Friends of Hollywood Central Park
FuturePorts
Gardena Valley Chamber
Gateway to LA
Glendale Association of Realtors
Glendale Chamber
Glendora Chamber
Greater Antelope Valley AOR
Greater Bakersfield Chamber of Commerce
Greater Lakewood Chamber of Commerce
Greater Leimert Park Village Crenshaw Corridor Business Improvement District
Greater Los Angeles African American Chamber
Greater Los Angeles Association of REALTORS
Greater Los Angeles New Car Dealers Association
Greater San Fernando Valley Regional Chamber
Harbor Association of Industry and Commerce
Harbor Trucking Association
Historic Core BID of Downtown Los Angeles
Hollywood Chamber
Hong Kong Trade Development Council
Hospital Association of Southern California
Hotel Association of Los Angeles
Huntington Park Area Chamber of Commerce
Independent Cities Association
Industrial Environmental Association
Industry Business Council
Inland Empire Economic Partnership
International Cannabis Business Women Association
Irwindale Chamber of Commerce
La Cañada Flintridge Chamber
LA Fashion District BID
LA South Chamber of Commerce
Lancaster Chamber of Commerce
Larchmont Boulevard Association
Latin Business Association
Latino Food Industry Association
Latino Restaurant Association
LAX Coastal Area Chamber
League of California Cities
Long Beach Area Chamber
Long Beach Economic Partnership
Los Angeles Area Chamber
Los Angeles County Board of Real Estate
Los Angeles County Waste Management Association
Los Angeles Gateway Chamber of Commerce
Los Angeles Gay & Lesbian Chamber of Commerce
Los Angeles Latino Chamber
Los Angeles Parking Association
MADIA Tech Launch
Malibu Chamber of Commerce
Marketplace Industry Association
Motion Picture Association of America, Inc.
MoveLA
Multicultural Business Alliance
NAIOP Southern California Chapter
Nareit
National Association of Tobacco Outlets
National Association of Waterfront Employers
National Association of Women Business Owners - CA
National Association of Women Business Owners - LA
National Federation of Independent Business
National Hookah Community Association
National Latina Business Women's Association
Orange County Business Council
Pacific Merchant Shipping Association
Pacific Palisades Chamber
Panorama City Chamber of Commerce
Paramount Chamber of Commerce
Pasadena Chamber
Pasadena Foothills Association of Realtors
PhRMA
Planned Parenthood Affiliates of California
Pomona Chamber
Propel LA
Rancho Southeast Association of Realtors
ReadyNation California
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West Valley/Warner Center Chamber
Western Electrical Contractors Association
Western Manufactured Housing Association
Western States Petroleum Association
Westside Council of Chambers
Whittier Chamber of Commerce
Wilmington Chamber
World Trade Center

From: Brian Flynn [mailto:brian@lozeaudrury.com]
Sent: Tuesday, January 18, 2022 9:41 AM
To: CityClerk <CityClerk@longbeach.gov>
Subject: Comment in Support of SAFER Appeal- Addendum for LUEP and 7th&Locust Project (Agenda Item 21)

-EXTERNAL-

Dear Mayor Garcia, Vice Mayor Richardson, Honorable Council Members, and Ms. De La Garza:

Please find attached a supplemental comment submitted on behalf of the Supporters Alliance for Environmental Responsibility ("SAFER") in support of their appeal concerning the Addendum to the Downtown Plan environmental impact report prepared for the Land Use Equivalency Program ("LUEP") and 7th Avenue and Locust Street Mixed-Use Project to be heard as Agenda Item 21 at tonight's City Council meeting.

Confirmation of receipt of this email would be greatly appreciated.

Thank you,
Brian B. Flynn
Lozeau | Drury LLP
1939 Harrison Street, Suite 150
Oakland, California 94612
(510) 836-4200
(510) 836-4205 (fax)
brian@lozeaudrury.com

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Oakland, CA 94612
www.lozeaudrury.com
brian@lozeaudrury.com

VIA E-MAIL

January 18, 2022

Dr. Robert Garcia, Mayor
Rex Richardson, Vice Mayor
Mary Zendejas
Cindy Allen
Suzie A. Price
Daryl Supernaw
Stacy Mungo
Dr. Suely Saro
Roberto Uranga
Al Austin
City Council
City of Long Beach
411 W. Ocean Blvd.
Long Beach, CA 90802
cityclerk@longbeach.gov

Monique De La Garza, CMC
Office of the City Clerk
City of Long Beach
411 W. Ocean Blvd.
Long Beach, CA 90802
cityclerk@longbeach.gov

Re: Comment on 636 Locust Development Project (Council File No. 22-0061)
CITY COUNCIL AGENDA ITEM 21 (Jan. 18, 2022)

Dear Mayor Garcia, Vice Mayor Richardson, Honorable Council Members, and Ms. De La Garza:

I am writing on behalf of the Supporters Alliance for Environmental Responsibility ("SAFER") in support of their appeal concerning the Addendum (EIRA 06-20) to the 2012 Downtown Plan Environmental Impact Report ("EIR") prepared for the new Land Use Equivalency Program ("LUEP") and 7th Avenue and Locust Street Mixed-Use development ("7th & Locust Project") to be heard as Agenda Item 21 at the City Council's meeting on January 18, 2022 (Council File No. 22-0061). This comment letter serves as a supplement to SAFER's previous comment letter submitted to the Long Beach Planning Commission on September 16, 2021 and submitted to the City Council with SAFER's appeal.

In addition to the issues raised in SAFER's September 16 comment to the Planning Commission, SAFER requests the City Council deny this Project due to significant impacts to indoor and outdoor air quality that will result from the development of the 7th & Locus Project, which were not addressed in the Addendum or the Downtown Plan EIR. SAFER's review of the Project and Addendum has been assisted by indoor air quality expert Francis Offermann, CIH,

and air quality experts Matt Hagemann, P.G., C.Hg., and Paul E. Rosenfeld, Ph.D., of the Soil/Water/Air Protection Enterprise ("SWAPE"). The expert comments of Mr. Offermann and SWAPE are attached as Exhibit A and Exhibit B, respectively. Based on the analysis of these experts, the Addendum is not appropriate and SAFER respectfully requests that the City prepare an EIR instead.

PROJECT DESCRIPTION

The "project" here consists of two parts: (1) the Land Use Equivalency Program ("LUEP") and (2) the 7th & Locust Mixed-Use Project.

The LUEP is a response to the current exceedance of allowed residential units within the Downtown Plan area as analyzed in the 2012 PEIR. The 2012 Downtown Plan PEIR evaluated impacts for the development of 5,000 residential units, construction, and operation of 480,000 square feet of retail/commercial space, and 1,500,00 square feet of office space. Currently, the Downtown Plan area has 5,252 residential units. The LUEP relies on something called a Downtown Plan Equivalency Calculator ("DPEC"), which purports to create a mechanism by which the City can re-allocate use designations within the Downtown Plan area from office/commercial/hotel uses to residential uses without exceeding the environmental impacts analyzed in the 2012 Downtown Plan PEIR. Under the proposed LUEP, the City would be able to continue to approve residential development within the Downtown Plan by making corresponding reductions in commercial/office/hotel development. Under the LUEP, an additional 3,260 residential units (for a total of 8,260 units) could be approved by reducing office uses by 417,060 square feet, commercial uses by 135,320 square feet, and hotel uses by 177 rooms.

The proposed 7th & Locust Project is a 7-story high rise building on a 0.52-acre site with 108 residential units, 1,188 sf of retail uses, a 687 sf amenity lounge, a fitness room, on the ground floor level, and a courtyard, pool and pool deck, and community room on the third level. The proposed 7th & Locust would provide 5,650 sf of common open space. The proposed building would be approximately 98 feet tall and would include 172,068 sf of floor area with an FAR of 3.6:1.

LEGAL STANDARD

Preparation of an Addendum Under CEQA

Here, the City has prepared an Addendum to the previously certified Downtown Plan EIR. Pursuant to the CEQA Guidelines, an addendum to a previous EIR is proper only where "some changes or additions are necessary but none of the conditions described in Section 15162 calling for preparation of a subsequent EIR have occurred." (14 CCR § 15164(a).) Looking to Guidelines Section 1512, **an addendum is not appropriate when:**

(1) Substantial changes are proposed in the project which will require major revisions

of the previous EIR or negative declaration due to **the involvement of new significant environmental effects or a substantial increase** in the severity of previously identified significant effects;

(2) Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR or Negative Declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or

(3) **New information of substantial importance**, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the negative declaration was adopted, shows any of the following:

(A) The project will have **one or more significant effects not discussed in the previous EIR or negative declaration**;

(B) Significant effects previously examined will be substantially more severe than shown in the previous EIR;

(C) Mitigation measures or alternatives previously found not to be feasible would, in fact, be feasible and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or

(D) **Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment**, but the project proponents decline to adopt the mitigation measure or alternative.

(14 CCR § 15162(a).)

Tiering Under CEQA

CEQA permits agencies to 'tier' CEQA documents, in which general matters and environmental effects are considered in a document "prepared for a policy, plan, program or ordinance followed by narrower or site-specific [environmental review] which incorporate by reference the discussion in any prior [environmental review] and which concentrate on the environmental effects which (a) are capable of being mitigated, or (b) were not analyzed as significant effects on the environment in the prior [EIR]." (Pub. Res. Code ("PRC") § 21068.5.) "[T]iering is appropriate when it helps a public agency to focus upon the issues ripe for decision at each level of environmental review and in order to exclude duplicative analysis of environmental effects examined in previous [environmental reviews]." (*Id*. § 21093.) CEQA regulations strongly promote tiering of environmental review.

"Later activities in the program must be examined in light of the program [document] to determine whether an additional environmental document must be prepared." (14 CCR § 15168©.) The first consideration is whether the activity proposed is covered by the program. (*Id.* § 15168©(2).) If a later project is outside the scope of the program, then it is treated as a separate

project and the previous environmental review may not be relied upon in further review. (*See Sierra Club v. County of Sonoma* (1992) 6 Cal.App.4th 1307, 1320–21.) The second consideration is whether the "later activity would have effects that were not examined in the program." (14 CCR § 15168©(1).) A program environmental review may only serve "to the extent that it contemplates and adequately analyzes the potential environmental impacts of the project . . . ." (*Sierra Nevada Conservation v. County of El Dorado* (2012) 202 Cal.App.4th 1156, 1171 [quoting *Citizens for Responsible Equitable Envtl. Dev. V. City of San Diego Redevelopment Agency* (2005) 134 Cal.App.4th 598, 615].) If the program environmental review does not evaluate the environmental impacts of the project, a tiered [CEQA document] must be completed before the project is approved. (*Id.* at 1184.)

For these inquiries, the "fair argument test" applies. (*Sierra Club*, 6 Cal.App.4th at 1318; *see also Sierra Club v. County of San Diego* (2014) 231 Cal.App.4th 1152, 1164 ("when a prior EIR has been prepared and certified for a program or plan, the question for a court reviewing an agency's decision not to use a tiered EIR for a later project 'is one of law, i.e., 'the sufficiency of the evidence to support a fair argument.'" [quoting *Sierra Club*, 6 Cal.App.4th at 1318]).) Under the fair argument test, a new EIR must be prepared "whenever it can be fairly argued on the basis of substantial evidence that the project may have significant environmental impact. (*Sierra Club*, 6 Cal.App.4th at 1316 [quotations and citations omitted].) When applying the fair argument test, "deference to the agency's determination is not appropriate and its decision not to require an EIR can be upheld only when there is no credible evidence to the contrary." (*Id*. at 1318.) "[I]f there is substantial evidence in the record that the later project may arguably have a significant adverse effect on the environment which was not examined in the prior program EIR, doubts must be resolved in favor of environmental review and the agency must prepare a new tiered EIR, notwithstanding the existence of contrary evidence." (*Id.* at 1319.)

DISCUSSION

A. The Project requires an EIR—not an Addendum—because of new significant impacts which were not previously analyzed in the 2012 Downtown Plan EIR.

As a preliminary matter, the City has improperly relied upon CEQA's subsequent review provisions (PRC § 21166; 14 CCR §§ 15162, 15164). Where a previous EIR has been certified for a project, CEQA's subsequent review provisions determine when "[a]subsequent EIR shall be prepared for ***that*** project." (14 CCR § 15162 [emphasis added].) Here, no specific project has ever been proposed for the Project site. The 2012 Downtown Plan EIR analyzed the full downtown plan area but not did not analyze anything as specific as the 7th & Locust Project. Rather, the 2012 Downtown Plan EIR better described as a programmatic EIR ("PEIR"), which is subject to CEQA's tiering standards rather than subsequent review.

A lead agency may tier EIRs where multiple individual projects or phased (or "tiered") projects are to be undertaken, and the individual projects are linked geographically, temporally, or in an otherwise logical manner. (14 CCR §§ 15165, 15168.) Here, there is no doubt that the project areas within the Downtown Plan are linked in a "logical manner" and that the 2012

Downtown Plan EIR is a PEIR subject to CEQA Guidelines section 15168. Under Section 15168, ***"[i]f a later activity would have effects that were not examined in the program EIR, a new initial study would need to be prepared leading to either an EIR or a negative declaration***." (14 CCR § 15168©(1) [emphasis added].) Importantly, in reviewing an agency's decision whether to prepare a tiered EIR, the "fair argument" test applies. (*Sierra Club v. Cnty. of Sonoma* (1992) 6 Cal.App.4th 1307, 1318.) Under the fair argument test, a new EIR must be prepared "whenever it can be fairly argued on the basis of substantial evidence that the project may have a significant environmental impact." (*Id*. at 1316; see *Friends of Coll. Of San Mateo Gardens v. San Mateo Cnty. Comm. College Dist*. (2016) 1 Cal.5th 937, 960.) A PEIR may only serve for subsequent actions "to the extent that it ***contemplates and adequately analyzes*** the potential environmental impacts of the project. . . ." (*Center for Sierra Nevada Conservation v. County of El Dorado* (2012) 202 Cal.App.4th 1156, 1171[emphasis added] [citations omitted].) Here, because the 7th & Locust Project is outside the scope of the Downtown Plan EIR and there is a fair argument that the 7th & Locust Project will result in impacts not analyzed in the 2012 Downtown Plan EIR, an EIR is required.

A. An EIR is required because the Project will have significant impacts on indoor air quality from formaldehyde emissions that were not previously analyzed nor could have been known when the Downtown Plan EIR was certified in 2012.

Certified Industrial Hygienist, Francis Offermann, PE, CIH, has conducted a review of the Project. Mr. Offermann is one of the world's leading experts on indoor air quality, in particular emissions of formaldehyde, and has published extensively on the topic. As discussed below and set forth in Mr. Offermann's comments, the 7th & Locust Project's emissions of formaldehyde to air will result in very significant cancer risks to future residents and employees of the Project. Mr. Offermann's comment and CV is attached as Exhibit A.

Importantly, Mr. Offermann highlights that the previous 2012 Downtown Plan EIR did not address indoor air quality impacts or formaldehyde emissions. Because these impacts were not previously analyzed at all, the fair argument standard applies and an EIR is required to address and mitigate this impact. Furthermore, Mr. Offermann's analysis is based on new information that could not have been known in 2012 when the Downtown Plan EIR was certified. (Ex. A, p. 1.) Therefore, even if the City were allowed to proceed under CEQA's subsequent review provisions, the Addendum is not proper and an EIR is required.

Formaldehyde is a known human carcinogen and listed by the State of California as a Toxic Air Contaminant ("TAC"). The South Coast Air Quality Management District ("SCAQMD") has established a significance threshold of health risks for carcinogenic TACs of 10 in a million.

Mr. Offermann explains that many composite wood products typically used in home and apartment building construction contain formaldehyde-based glues which off-gas formaldehyde over a very long time period. He states, "The primary source of formaldehyde indoors is

composite wood products manufactured with urea-formaldehyde resins, such as plywood, medium density fiberboard, and particle board. These materials are commonly used in residential, office, and retail building construction for flooring, cabinetry, baseboards, window shades, interior doors, and window and door trims." (Ex. A, p. 3.)

Mr. Offermann concludes that future employees of the residential spaces of the 7th & Locust Project will be exposed to a cancer risk from formaldehyde of approximately 112 per million and that future employees of the commercial spaces will be exposed to a cancer risk from formaldehyde of approximately 17.7 per million, ***even assuming*** all materials are compliant with the California Air Resources Board's formaldehyde airborne toxics control measure. (Ex. A, p.p 4-5.) These figures exceed SCAQMD's CEQA significance thresholds for airborne cancer risk of 10 per million. Importantly, Mr. Offermann's conclusions are based on studies conducted in 2019 and therefore were not available at the time when the Downtown Plan EIR was certified in 2012.

Mr. Offermann concludes that these significant environmental impacts must be analyzed and mitigation measures should be imposed to reduce the risk of formaldehyde exposure. (Ex. A, pp. 5, 10-11.) He prescribes a methodology for estimating the Project's formaldehyde emissions in order to do a more project-specific health risk assessment. (*Id*., pp. 5-10.). Mr. Offermann also suggests several feasible mitigation measures, such as requiring the use of composite wood products manufactured with CARB approved no-added formaldehyde (NAF) resins, which are readily available. (*Id*., pp. 11-12.)

When a Project exceeds a duly adopted CEQA significance threshold, as here, this alone establishes substantial evidence that the project will have a significant adverse environmental impact. Indeed, in many instances, such air quality thresholds are the only criteria reviewed and treated as dispositive in evaluating the significance of a project's air quality impacts. (See, e.g. *Schenck v. County of Sonoma* (2011) 198 Cal.App.4th 949, 960 [County applies Air District's "published CEQA quantitative criteria" and "threshold level of cumulative significance"]; see also *Communities for a Better Environment v. California Resources Agency* (2002) 103 Cal.App.4th 98, 110-111 ["A 'threshold of significance' for a given environmental effect is simply that level at which the lead agency finds the effects of the project to be significant"].)

The California Supreme Court made clear the substantial importance that an air district significance threshold plays in providing substantial evidence of a significant adverse impact. (*Communities for a Better Environment v. South Coast Air Quality Management Dist.* (2010) 48 Cal.4th 310, 327 ["As the [South Coast Air Quality Management] District's established significance threshold for Nox is 55 pounds per day, these estimates [of Nox emissions of 201 to 456 pounds per day] constitute substantial evidence supporting a fair argument for a significant adverse impact."].) Since expert evidence demonstrates that the Project will exceed the SDCAPCD's CEQA significance threshold, there is substantial evidence that an "unstudied, potentially significant environmental effect[]" exists. (See *Friends of Coll. Of San Mateo Gardens v. San Mateo Cty. Cmty. Coll. Dist.* (2016) 1 Cal.5th 937, 958 [emphasis added].)

The failure to address the Project's formaldehyde emissions is contrary to the California Supreme Court's decision in *California Building Industry Ass'n v. Bay Area Air Quality Mgmt. Dist.* (2015) 62 Cal.4th 369, 386 ("CBIA"). In that case, the Supreme Court expressly holds that potential adverse impacts to future users and residents from pollution generated by a proposed project must be addressed under CEQA. At issue in *CBIA* was whether the Air District could enact CEQA guidelines that advised lead agencies that they must analyze the impacts of adjacent environmental conditions on a project. The Supreme Court held that CEQA does not generally require lead agencies to consider the environment's effects on a project. (*CBIA*, 62 Cal.4th at 800-01.) However, to the extent a project may exacerbate existing environmental conditions at or near a project site, those would still have to be considered pursuant to CEQA. (*Id*. at 801.) In so holding, the Court expressly held that CEQA's statutory language required lead agencies to disclose and analyze "impacts on a project's users or residents that arise from the project's effects on the environment." (*Id*. at 800.)

The carcinogenic formaldehyde emissions identified by Mr. Offermann are not an existing environmental condition. Those emissions to the air will be from the Project. Once built, the Project will begin to emit formaldehyde at levels that pose significant direct and cumulative health risks to employees of the Project. The Supreme Court in *CBIA* expressly finds that this type of air emission and health impact by the project on the environment and a "project's users and residents" must be addressed in the CEQA process. The existing TAC sources near the Project site would have to be considered in evaluating the cumulative effect on future residents of both the Project's TAC emissions as well as those existing off-site emissions.

The Supreme Court's reasoning is well-grounded in CEQA's statutory language. CEQA expressly includes a project's effects on human beings as an effect on the environment that must be addressed in an environmental review. "Section 21083(b)(3)'s express language, for example, requires a finding of a 'significant effect on the environment' (§ 21083(b)) whenever the 'environmental effects of a project will cause substantial adverse effects on human beings, either directly or indirectly.'" (*CBIA*, 62 Cal.4th at 800.) Likewise, "the Legislature has made clear—in declarations accompanying CEQA's enactment—that public health and safety are of great importance in the statutory scheme." (*Id*. [citing e.g., §§ 21000(b), (c), (d), (g), 21001(b), (d)].) It goes without saying that the future residents and employees of the Project are human beings and the health and safety of those residents must be subjected to CEQA's safeguards.

The City has a duty to investigate issues relating to a project's potential environmental impacts. (See *County Sanitation Dist. No. 2 v. County of Kern* (2005) 127 Cal.App.4th 1544, 1597–98. ["[U]nder CEQA, the lead agency bears a burden to investigate potential environmental impacts."].) The proposed Project will have significant impacts on air quality and health risks by emitting cancer-causing levels of formaldehyde into the air that will expose future employees to cancer risks potentially in excess of SCAQMD's threshold of significance for cancer health risks of 10 in a million.

B. An EIR is required because the Project will have significant impacts on human health from diesel particulate matter that were not previously analyzed in the 2012 Downtown Plan EIR.

The environmental consulting firm SWAPE reviewed the Project and Addendum and found that air quality impacts from emissions of diesel particulate matter ("DPM"), a known human carcinogen, would result in significant human health risks. SWAPE's comment letter is attached as Exhibit B and their findings are summarized below.

Importantly, the 2012 Downtown Plan EIR did not address the impacts of DPM emissions on human health. Because the impact was not previously analyzed at all, the fair argument standard applies and an EIR is required to address and mitigate this impact.

SWAPE prepared a screening-level health risk assessment ("HRA") to evaluate potential DPM impacts from the construction and operation of the 7th & Locust Project. (Ex. B, pp. 10-13.) SWAPE used AERSCREEN, the leading screening-level air quality dispersion model. (*Id*., p. 10) SWAPE used a sensitive receptor distance of 25 meters and analyzed impacts to individuals at different stages of life based on OEHHA and SCAQMD guidance. (*Id*., pp. 11-12.)

SWAPE found that the excess cancer risks for third-trimester pregnancies, infants, children, and adults at the closest sensitive receptor located approximately 25 meters away, over the course of Project construction and operation, are approximately 25.4, 614, 142, and 15.4 in one million, respectively. (Ex. B, pp. 12-13.) Moreover, SWAPE found that the excess cancer risk over the course of a residential lifetime is approximately 798 in one million. (*Id*.) SWAPE concludes, "The 3rd trimester, infant, child, adult, and lifetime cancer risks exceed the SCAQMD threshold of 10 in one million, thus resulting in a potentially significant impact not previously addressed or identified by the Addendum." (*Id.*, p. 13.)

Because this impact was not disclosed, discussed, or mitigated by the 2012 Downtown Plan EIR or the Addendum, the Addendum is improper and an EIR is required.

II. Under CEQA's subsequent review provisions, the Addendum is improper because of new information regarding significant impacts and new available mitigation measures since certification of the 2012 Downtown Plan EIR.

Under CEQA, an addendum is not allowed when "[n]ew information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified" shows that (1) the project will have one or more significant effects not discussed in the previous EIR or (2) mitigation measures considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment. (14 CCR §§15162, 15164.) Under that standard, the Addendum is improper because the indoor air quality impacts from formaldehyde could not have been known when the Downtown Plan EIR was certified in 2012. Furthermore, the Addendum is improper because of new mitigation measures available to mitigate the Project's indoor and

outdoor air quality impacts.

A. The Project's significant impacts to human health from indoor emissions of formaldehyde as well as the mitigation measures available to reduce that impact are new information that could not have been known previous to 2019.

As discussed above, the Project will result in a significant impact to human health from indoor emissions of formaldehyde. This potential indoor air quality impact could not have been known until 2019 when the first study was published showing that homes using composite wood products that comply with California Air Resources Board ("CARB") standards vastly exceed CEQA significance thresholds for cancer risk. Therefore, this impact was not known and could not have been known in 2012 when the Downtown Plan EIR was certified. When scientific information was not available at the time of prior CEQA review, more recent studies showing that a project may have more serious human health or environmental impacts constitute significant new information requiring a subsequent EIR rather than an addendum. (*Security Envt'l Sys. V South Coast Air Quality Mgmt. Dist*. (1991) 229 Cal.App.3d 110, 124; *Meridian Ocean Sys. V. State Lands Com.* (1990) 222 Cal.App.3d 153, 169). As such, the Addendum is improper under CEQA Guidelines sections 15162 and 15164 and an EIR is required. (*See* 14 CCR §§ 15162(a)(3), 15164(a).)

Additionally, Mr. Offermann suggests mitigating the Project's indoor air quality impacts by requiring all composite wood products used in construction of the Project to be manufactured with CARB-approved no-added formaldehyde ("NAF") resins. Because indoor air quality impacts were not analyzed in the 2012 Downtown Plan EIR, the City has not considered NAF composite wood products. Furthermore, such NAF products have only become readily available recently and, thus, could not have been considered in 2012. Because the Addendum does not adopt any measures to reduce indoor formaldehyde emissions, an EIR is required.

B. New mitigation measures exist to reduce the significant air quality impacts identified in the 2012 Downtown Plan EIR.

The 2012 Downtown Plan EIR concluded that it would result in significant and unavoidable impacts to air quality. Although the 2012 Downtown Plan EIR contained mitigation measures that apply to this Project, different mitigation measures exist now, which were not available in 2012, to reduce the Project's air quality impacts. As one example, the Project could be required to utilize off-road construction equipment that meets the EPA's "Tier 4 Final" emissions standards to reduce the Project's impacts, as opposed to the "Tier 4" standard required by the Downtown Plan EIR. Since 1994, the EPA has slowly adopted more stringent standards to lower the emissions from off-road construction equipment since 1994. Since that time, Tier 1, Tier 2, Tier 3, Tier 4 Interim, and Tier 4 Final construction equipment have been phased in over time. Tier 4 Final represents the cleanest burning equipment and therefore has the lowest emissions compared to other tiers. Because Tier 4 Final was not available in 2012, this

mitigation is new information that could not have been known previously. (*See* 14 CCR 15162(3).) Because the Addendum has failed to adopt such mitigation, an EIR is required.

III. The Addendum's conclusions regarding the Project's impacts relative to the 2012 Downtown Plan EIR are not supported by substantial evidence.

A. The Addendum failed to provide substantial evidence that the LUEP would not substantially increase significant impacts identified in the 2012 Downtown Plan EIR.

Pursuant to the CEQA Guidelines, an addendum is not proper where changes in a project would result in a substantial increase in the severity of previously identified significant impacts. (CCR § 15162(a)(1).) Although the Addendum identifies several impacts from the 2012 Downtown Plan EIR will remain significant and unavoidable with the implementation of the LUEP, the Addendum fails to adequately discuss the *relative* severity of the impact.

For example, the Addendum concludes that the LUEP's impact on population and housing, including displacement, will remain significant and unavoidable. However, the Addendum does not explain how the significance of these impacts compares to the severity identified in the 2012 Downtown Plan EIR. By increasing residential uses in the Downtown Plan area, the LUEP's impacts to population and displacement will certainly be greater than the impacts analyzed in the 2012 EIR. The Addendum must address whether the impacts will be more severe rather than simply claiming that the impacts will remain significant and unavoidable.

B. The Addendum underestimated the emissions related to the construction and operation of the 7th & Locust Project

SWAPE found that the Addendum underestimated the 7th & Locust Project's emissions and therefore cannot be relied upon to determine the significance of the Project's air quality impacts. The Addendum relies on emissions calculated from the California Emissions Estimator Model Version CalEEMod.2016.3.2 ("CalEEMod"). (Ex. B, p. 1.) This model, which is used to generate a project's construction and operational emissions, relies on recommended default values based on site specific information related to a number of factors (*Id.*, pp. 1-2.) CEQA requires that any changes to the default values must be justified by substantial evidence. (*Id*., p. 2.)

SWAPE reviewed the Addendum's CalEEMod output files and found that the values input into the model were inconsistent with information provided in the Addendum. (Ex. A, p. 2.) This results in an underestimation of the Project's emissions. (*Id*.) As a result, the Addendum's air quality analysis cannot be relied upon as substantial evidence to compare the Project's impacts to the impacts analyzed in the 2012 Downtown Plan EIR.

Specifically, SWAPE found that the following values used in the Addendum's air quality

analysis were either inconsistent with information provided in the Addendum or otherwise unjustified:

1. Unsubstantiated Reduction to CO_2 Intensity Factor (Ex. B, pp. 2-3.)
2. Unsubstantiated Changes to Architectural and Area Coating Areas (Ex. B, p. 3.)
3. Unsubstantiated Construction Phase Lengths (Ex. B, pp. 3-6.)
4. Unsubstantiated Reduction to the Hauling Trip Number (Ex. B, p. 6.)
5. Unsubstantiated Changes to the Solid Waste Generation Rate (Ex. B, p. 7.)
6. Unsubstantiated Changes to the Indoor/Outdoor Water Use Rates (Ex. B, pp. 7-8.)

As a result of these errors in the Addendum, the Project's construction and operational emissions are underestimated and cannot be relied upon to determine the significance of the Project's air quality impacts nor relied upon to compare the Project's impacts to the 2012 Downtown Plan EIR.

CONCLUSION

For the foregoing reasons, the SAFER and its members respectfully request that the City Council refrain from approving the LUEP and 7th & Locust Project at this time and refrain from taking any further action on this matter until an EIR has been prepared. Thank you for your attention to these comments.

Sincerely,

Brian B. Flynn
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EXHIBIT A

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From: Francis J. Offermann PE CIH

Subject: Indoor Air Quality: 636 Locust Avenue Project, Long Beach, CA
(IEE File Reference: P-4368)

Pages: 16

Indoor Air Quality Impacts

I am writing this letter as there is new information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified (AEOCM, 2010), that shows the Project will have significant effects from formaldehyde emission not discussed in the previous EIR. This new information relates to the recent Chan 2019 study that shows that new residences built with composite wood products that are CARB Phase 2 certified, do not insure indoor formaldehyde concentrations that are below the CEQA cancer risk of 10 per million.

Indoor air quality (IAQ) directly impacts the comfort and health of building occupants, and the achievement of acceptable IAQ in newly constructed and renovated buildings is a well-recognized design objective. For example, IAQ is addressed by major high-performance building rating systems and building codes (California Building Standards Commission, 2014; USGBC, 2014). Indoor air quality in homes is particularly important because occupants, on average, spend approximately ninety percent of their time indoors with the majority of this time spent at home (EPA, 2011). Some segments of the population that are

most susceptible to the effects of poor IAQ, such as the very young and the elderly, occupy their homes almost continuously. Additionally, an increasing number of adults are working from home at least some of the time during the workweek. Indoor air quality also is a serious concern for workers in hotels, offices and other business establishments.

The concentrations of many air pollutants often are elevated in homes and other buildings relative to outdoor air because many of the materials and products used indoors contain and release a variety of pollutants to air (Hodgson et al., 2002; Offermann and Hodgson, 2011). With respect to indoor air contaminants for which inhalation is the primary route of exposure, the critical design and construction parameters are the provision of adequate ventilation and the reduction of indoor sources of the contaminants.

Indoor Formaldehyde Concentrations Impact. In the California New Home Study (CNHS) of 108 new homes in California (Offermann, 2009), 25 air contaminants were measured, and formaldehyde was identified as the indoor air contaminant with the highest cancer risk as determined by the California Proposition 65 Safe Harbor Levels (OEHHA, 2017a), No Significant Risk Levels (NSRL) for carcinogens. The NSRL is the daily intake level calculated to result in one excess case of cancer in an exposed population of 100,000 (i.e., ten in one million cancer risk) and for formaldehyde is 40 µg/day. The NSRL concentration of formaldehyde that represents a daily dose of 40 µg is 2 $\mu g/m^3$, assuming a continuous 24-hour exposure, a total daily inhaled air volume of 20 m^3, and 100% absorption by the respiratory system. All of the CNHS homes exceeded this NSRL concentration of 2 $\mu g/m^3$. The median indoor formaldehyde concentration was 36 $\mu g/m^3$, and ranged from 4.8 to 136 $\mu g/m^3$, which corresponds to a median exceedance of the 2 $\mu g/m^3$ NSRL concentration of 18 and a range of 2.3 to 68.

Therefore, the cancer risk of a resident living in a California home with the median indoor formaldehyde concentration of 36 $\mu g/m^3$, is 180 per million as a result of formaldehyde alone. The CEQA significance threshold for airborne cancer risk is 10 per million, as established by the South Coast Air Quality Management District (SCAQMD, 2015).

Besides being a human carcinogen, formaldehyde is also a potent eye and respiratory irritant. In the CNHS, many homes exceeded the non-cancer reference exposure levels

(RELs) prescribed by California Office of Environmental Health Hazard Assessment (OEHHA, 2017b). The percentage of homes exceeding the RELs ranged from 98% for the Chronic REL of 9 $\mu g/m^3$ to 28% for the Acute REL of 55 $\mu g/m^3$.

The primary source of formaldehyde indoors is composite wood products manufactured with urea-formaldehyde resins, such as plywood, medium density fiberboard, and particleboard. These materials are commonly used in building construction for flooring, cabinetry, baseboards, window shades, interior doors, and window and door trims.

In January 2009, the California Air Resources Board (CARB) adopted an airborne toxics control measure (ATCM) to reduce formaldehyde emissions from composite wood products, including hardwood plywood, particleboard, medium density fiberboard, and also furniture and other finished products made with these wood products (California Air Resources Board 2009). While this formaldehyde ATCM has resulted in reduced emissions from composite wood products sold in California, they do not preclude that homes built with composite wood products meeting the CARB ATCM will have indoor formaldehyde concentrations that are below cancer and non-cancer exposure guidelines.

A follow up study to the California New Home Study (CNHS) was conducted in 2016-2018 (Chan et. al., 2019), and found that the median indoor formaldehyde in new homes built after 2009 with CARB Phase 2 Formaldehyde ATCM materials had lower indoor formaldehyde concentrations, with a median indoor concentrations of 22.4 $\mu g/m^3$ (18.2 ppb) as compared to a median of 36 $\mu g/m^3$ found in the 2007 CNHS.

Thus, while new homes built after the 2009 CARB formaldehyde ATCM have a 38% lower median indoor formaldehyde concentration and cancer risk, the median lifetime cancer risk is still 112 per million for homes built with CARB compliant composite wood products, which is more than 11 times the OEHHA 10 in a million cancer risk threshold (OEHHA, 2017a).

With respect to this Project, the buildings in the 636 Locust Avenue Project, Long Beach, CA consist of a residential buildings and commercial buildings (i.e., offices, hotels,

restaurants, and retail).

The employees of the commercial spaces (i.e., offices, hotels, restaurants, and retail) are expected to experience significant indoor exposures (e.g., 40 hours per week, 50 weeks per year). These exposures for employees are anticipated to result in significant cancer risks resulting from exposures to formaldehyde released by the building materials and furnishing commonly found in offices, warehouses, residences and hotels.

Because these commercial spaces will be constructed with CARB Phase 2 Formaldehyde ATCM materials, and be ventilated with the minimum code required amount of outdoor air, the indoor formaldehyde concentrations are likely similar to those concentrations observed in residences built with CARB Phase 2 Formaldehyde ATCM materials, which is a median of 22.4 $\mu g/m^3$ (Chan et. al., 2019)

Assuming that the commercial spaces employees work 8 hours per day and inhale 20 m^3 of air per day, the formaldehyde dose per work-day at the offices is 149 µg/day.

Assuming that these employees work 5 days per week and 50 weeks per year for 45 years (start at age 20 and retire at age 65) the average 70-year lifetime formaldehyde daily dose is 65.8 µg/day.

This is 1.64 times the NSRL (OEHHA, 2017a) of 40 µg/day and represents a cancer risk of 16.4 per million, which exceeds the CEQA cancer risk of 10 per million. This impact should be analyzed in an environmental impact report ("EIR"), and the agency should impose all feasible mitigation measures to reduce this impact. Several feasible mitigation measures are discussed below and these and other measures should be analyzed in an EIR.

The residential occupants will potentially have continuous exposure (e.g. 24 hours per day, 52 weeks per year). These exposures are anticipated to result in significant cancer risks resulting from exposures to formaldehyde released by the building materials and furnishing commonly found in residential construction.

Because these residences will be constructed with CARB Phase 2 Formaldehyde ATCM materials, and be ventilated with the minimum code required amount of outdoor air, the indoor residential formaldehyde concentrations are likely similar to those concentrations observed in residences built with CARB Phase 2 Formaldehyde ATCM materials, which is a median of 22.4 $\mu g/m^3$ (Chan et. al., 2019)

Assuming that the residential occupants inhale 20 m^3 of air per day, the average 70-year lifetime formaldehyde daily dose is 448 µg/day for continuous exposure in the residences. This exposure represents a cancer risk of 112 per million, which is more than 11 times the CEQA cancer risk of 10 per million. For occupants that do not have continuous exposure, the cancer risk will be proportionally less but still substantially over the CEQA cancer risk of 10 per million (e.g. for 12/hour/day occupancy, more than 5 times the CEQA cancer risk of 10 per million).

Appendix A, Indoor Formaldehyde Concentrations and the CARB Formaldehyde ATCM, provides analyses that show utilization of CARB Phase 2 Formaldehyde ATCM materials will not ensure acceptable cancer risks with respect to formaldehyde emissions from composite wood products.

Even composite wood products manufactured with CARB certified ultra low emitting formaldehyde (ULEF) resins do not insure that the indoor air will have concentrations of formaldehyde the meet the OEHHA cancer risks that substantially exceed 10 per million. The permissible emission rates for ULEF composite wood products are only 11-15% lower than the CARB Phase 2 emission rates. Only use of composite wood products made with no-added formaldehyde resins (NAF), such as resins made from soy, polyvinyl acetate, or methylene diisocyanate can insure that the OEHHA cancer risk of 10 per million is met.

The following describes a method that should be used prior to construction in the environmental review under CEQA, for determining whether the indoor concentrations resulting from the formaldehyde emissions of the specific building materials/furnishings selected for the building exceed cancer and non-cancer guidelines. Such a design analyses can be used to identify those materials/furnishings prior to the completion of the City's

CEQA review and project approval, that have formaldehyde emission rates that contribute to indoor concentrations that exceed cancer and non-cancer guidelines, so that alternative lower emitting materials/furnishings may be selected and/or higher minimum outdoor air ventilation rates can be increased to achieve acceptable indoor concentrations and incorporated as mitigation measures for this project.

Pre-Construction Building Material/Furnishing Formaldehyde Emissions Assessment.

This formaldehyde emissions assessment should be used in the environmental review under CEQA to assess the indoor formaldehyde concentrations from the proposed loading of building materials/furnishings, the area-specific formaldehyde emission rate data for building materials/furnishings, and the design minimum outdoor air ventilation rates. This assessment allows the applicant (and the City) to determine before the conclusion of the environmental review process and the building materials/furnishings are specified, purchased, and installed if the total chemical emissions will exceed cancer and non-cancer guidelines, and if so, allow for changes in the selection of specific material/furnishings and/or the design minimum outdoor air ventilations rates such that cancer and non-cancer guidelines are not exceeded.

1.) Define Indoor Air Quality Zones. Divide the building into separate indoor air quality zones, (IAQ Zones). IAQ Zones are defined as areas of well-mixed air. Thus, each ventilation system with recirculating air is considered a single zone, and each room or group of rooms where air is not recirculated (e.g. 100% outdoor air) is considered a separate zone. For IAQ Zones with the same construction material/furnishings and design minimum outdoor air ventilation rates. (e.g. hotel rooms, apartments, condominiums, etc.) the formaldehyde emission rates need only be assessed for a single IAQ Zone of that type.

2.) Calculate Material/Furnishing Loading. For each IAQ Zone, determine the building material and furnishing loadings (e.g., m^2 of material/m^2 floor area, units of furnishings/m^2 floor area) from an inventory of all potential indoor formaldehyde sources, including flooring, ceiling tiles, furnishings, finishes, insulation, sealants, adhesives, and any products constructed with composite wood products containing urea-formaldehyde resins (e.g., plywood, medium density fiberboard, particleboard).

3.) Calculate the Formaldehyde Emission Rate. For each building material, calculate the formaldehyde emission rate (µg/h) from the product of the area-specific formaldehyde emission rate (µg/m^2-h) and the area (m^2) of material in the IAQ Zone, and from each furnishing (e.g. chairs, desks, etc.) from the unit-specific formaldehyde emission rate (µg/unit-h) and the number of units in the IAQ Zone.

NOTE: As a result of the high-performance building rating systems and building codes (California Building Standards Commission, 2014; USGBC, 2014), most manufacturers of building materials furnishings sold in the United States conduct chemical emission rate tests using the California Department of Health "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions for Indoor Sources Using Environmental Chambers", (CDPH, 2017), or other equivalent chemical emission rate testing methods. Most manufacturers of building furnishings sold in the United States conduct chemical emission rate tests using ANSI/BIFMA M7.1 Standard Test Method for Determining VOC Emissions (BIFMA, 2018), or other equivalent chemical emission rate testing methods.

CDPH, BIFMA, and other chemical emission rate testing programs, typically certify that a material or furnishing does not create indoor chemical concentrations in excess of the maximum concentrations permitted by their certification. For instance, the CDPH emission rate testing requires that the measured emission rates when input into an office, school, or residential model do not exceed one-half of the OEHHA Chronic Exposure Guidelines (OEHHA, 2017b) for the 35 specific VOCs, including formaldehyde, listed in Table 4-1 of the CDPH test method (CDPH, 2017). These certifications themselves do not provide the actual area-specific formaldehyde emission rate (i.e., µg/m^2-h) of the product, but rather provide data that the formaldehyde emission rates do not exceed the maximum rate allowed for the certification. Thus for example, the data for a certification of a specific type of flooring may be used to calculate that the area-specific emission rate of formaldehyde is less than 31 µg/m^2-h, but not the actual measured specific emission rate, which may be 3, 18, or 30 µg/m^2-h. These area-specific emission rates determined from the product certifications of CDPH, BIFA, and other certification programs can be used as an initial estimate of the formaldehyde emission rate.

If the actual area-specific emission rates of a building material or furnishing is needed (i.e. the initial emission rates estimates from the product certifications are higher than desired), then that data can be acquired by requesting from the manufacturer the complete chemical emission rate test report. For instance if the complete CDPH emission test report is requested for a CDHP certified product, that report will provide the actual area-specific emission rates for not only the 35 specific VOCs, including formaldehyde, listed in Table 4-1 of the CDPH test method (CDPH, 2017), but also all of the cancer and reproductive/developmental chemicals listed in the California Proposition 65 Safe Harbor Levels (OEHHA, 2017a), all of the toxic air contaminants (TACs) in the California Air Resources Board Toxic Air Contamination List (CARB, 2011), and the 10 chemicals with the greatest emission rates.

Alternatively, a sample of the building material or furnishing can be submitted to a chemical emission rate testing laboratory, such as Berkeley Analytical Laboratory (https://berkeleyanalytical.com), to measure the formaldehyde emission rate.

4.) Calculate the Total Formaldehyde Emission Rate. For each IAQ Zone, calculate the total formaldehyde emission rate (i.e. µg/h) from the individual formaldehyde emission rates from each of the building material/furnishings as determined in Step 3.

5.) Calculate the Indoor Formaldehyde Concentration. For each IAQ Zone, calculate the indoor formaldehyde concentration (µg/m^3) from Equation 1 by dividing the total formaldehyde emission rates (i.e. µg/h) as determined in Step 4, by the design minimum outdoor air ventilation rate (m^3/h) for the IAQ Zone.

$$C_{in} = \frac{E_{total}}{Q_{oa}} \quad \text{(Equation 1)}$$

where:

C_{in} = indoor formaldehyde concentration (µg/m^3)

E_{total} = total formaldehyde emission rate (µg/h) into the IAQ Zone.

Q_{oa} = design minimum outdoor air ventilation rate to the IAQ Zone (m^3/h)

The above Equation 1 is based upon mass balance theory, and is referenced in Section 3.10.2 "Calculation of Estimated Building Concentrations" of the California Department of Health "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions for Indoor Sources Using Environmental Chambers", (CDPH, 2017).

6.) Calculate the Indoor Exposure Cancer and Non-Cancer Health Risks. For each IAQ Zone, calculate the cancer and non-cancer health risks from the indoor formaldehyde concentrations determined in Step 5 and as described in the OEHHA Air Toxics Hot Spots Program Risk Assessment Guidelines; Guidance Manual for Preparation of Health Risk Assessments (OEHHA, 2015).

7.) Mitigate Indoor Formaldehyde Exposures of exceeding the CEQA Cancer and/or Non-Cancer Health Risks. In each IAQ Zone, provide mitigation for any formaldehyde exposure risk as determined in Step 6, that exceeds the CEQA cancer risk of 10 per million or the CEQA non-cancer Hazard Quotient of 1.0.

Provide the source and/or ventilation mitigation required in all IAQ Zones to reduce the health risks of the chemical exposures below the CEQA cancer and non-cancer health risks.

Source mitigation for formaldehyde may include:

1.) reducing the amount materials and/or furnishings that emit formaldehyde
2.) substituting a different material with a lower area-specific emission rate of formaldehyde

Ventilation mitigation for formaldehyde emitted from building materials and/or furnishings may include:

1.) increasing the design minimum outdoor air ventilation rate to the IAQ Zone.

NOTE: Mitigating the formaldehyde emissions through use of less material/furnishings, or use of lower emitting materials/furnishings, is the preferred mitigation option, as mitigation with increased outdoor air ventilation increases initial and operating costs associated with the heating/cooling systems.

Further, we are not asking that the builder to "speculate" on what and how much composite materials be used, but rather at the design stage to select composite wood materials based on the formaldehyde emission rates that manufacturers routinely conduct using the California Department of Health "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions for Indoor Sources Using Environmental Chambers", (CDPH, 2017), and use the procedure described earlier (i.e. Pre-Construction Building Material/Furnishing Formaldehyde Emissions Assessment) to insure that the materials selected achieve acceptable cancer risks from material off gassing of formaldehyde.

Indoor Air Quality Impact Mitigation Measures

The following are recommended mitigation measures to minimize the impacts upon indoor quality:

Indoor Formaldehyde Concentrations Mitigation. Use only composite wood materials (e.g. hardwood plywood, medium density fiberboard, particleboard) for all interior finish systems that are made with CARB approved no-added formaldehyde (NAF) resins (CARB, 2009). CARB Phase 2 certified composite wood products, or ultra-low emitting formaldehyde (ULEF) resins, do not insure indoor formaldehyde concentrations that are below the CEQA cancer risk of 10 per million. Only composite wood products manufactured with CARB approved no-added formaldehyde (NAF) resins, such as resins made from soy, polyvinyl acetate, or methylene diisocyanate can insure that the OEHHA cancer risk of 10 per million is met.

Alternatively, conduct the previously described Pre-Construction Building Material/Furnishing Chemical Emissions Assessment, to determine that the combination of formaldehyde emissions from building materials and furnishings do not create indoor formaldehyde concentrations that exceed the CEQA cancer and non-cancer health risks.

It is important to note that we are not asking that the builder to "speculate" on what and how much composite materials be used, but rather at the design stage to select composite wood

materials based on the formaldehyde emission rates that manufacturers routinely conduct using the California Department of Health "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions for Indoor Sources Using Environmental Chambers", (CDPH, 2017), and use the procedure described earlier (i.e. Pre-Construction Building Material/Furnishing Formaldehyde Emissions Assessment) to insure that the materials selected achieve acceptable cancer risks from material off gassing of formaldehyde.

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APPENDIX A

INDOOR FORMALDEHYDE CONCENTRATIONS
AND THE
CARB FORMALDEHYDE ATCM

With respect to formaldehyde emissions from composite wood products, the CARB ATCM regulations of formaldehyde emissions from composite wood products, do not assure healthful indoor air quality. The following is the stated purpose of the CARB ATCM regulation - *The purpose of this airborne toxic control measure is to "reduce formaldehyde emissions from composite wood products, and finished goods that contain composite wood products, that are sold, offered for sale, supplied, used, or manufactured for sale in California"*. In other words, the CARB ATCM regulations do not "assure healthful indoor air quality", but rather "reduce formaldehyde emissions from composite wood products".

Just how much protection do the CARB ATCM regulations provide building occupants from the formaldehyde emissions generated by composite wood products ? Definitely some, but certainly the regulations do not "*assure healthful indoor air quality"* when CARB Phase 2 products are utilized. As shown in the Chan 2019 study of new California homes, the median indoor formaldehyde concentration was of 22.4 $\mu g/m^3$ (18.2 ppb), which corresponds to a cancer risk of 112 per million for occupants with continuous exposure, which is more than 11 times the CEQA cancer risk of 10 per million.

Another way of looking at how much protection the CARB ATCM regulations provide building occupants from the formaldehyde emissions generated by composite wood products is to calculate the maximum number of square feet of composite wood product that can be in a residence without exceeding the CEQA cancer risk of 10 per million for occupants with continuous occupancy.

For this calculation I utilized the floor area (2,272 ft^2), the ceiling height (8.5 ft), and the number of bedrooms (4) as defined in Appendix B (New Single-Family Residence Scenario) of the Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions for Indoor Sources Using Environmental Chambers, Version 1.1, 2017, California Department of Public Health,

Richmond, CA. https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/EHLB/IAQ/Pages/VOC.aspx.

For the outdoor air ventilation rate I used the 2019 Title 24 code required mechanical ventilation rate (ASHRAE 62.2) of 106 cfm (180 m^3/h) calculated for this model residence. For the composite wood formaldehyde emission rates I used the CARB ATCM Phase 2 rates.

The calculated maximum number of square feet of composite wood product that can be in a residence, without exceeding the CEQA cancer risk of 10 per million for occupants with continuous occupancy are as follows for the different types of regulated composite wood products.

Medium Density Fiberboard (MDF) – 15 ft^2 (0.7% of the floor area), or
Particle Board – 30 ft^2 (1.3% of the floor area), or
Hardwood Plywood – 54 ft^2 (2.4% of the floor area), or
Thin MDF – 46 ft^2 (2.0 % of the floor area).

For offices and hotels the calculated maximum amount of composite wood product (% of floor area) that can be used without exceeding the CEQA cancer risk of 10 per million for occupants, assuming 8 hours/day occupancy, and the California Mechanical Code minimum outdoor air ventilation rates are as follows for the different types of regulated composite wood products.

Medium Density Fiberboard (MDF) – 3.6 % (offices) and 4.6% (hotel rooms), or
Particle Board – 7.2 % (offices) and 9.4% (hotel rooms), or
Hardwood Plywood – 13 % (offices) and 17% (hotel rooms), or
Thin MDF – 11 % (offices) and 14 % (hotel rooms)

Clearly the CARB ATCM does not regulate the formaldehyde emissions from composite wood products such that the potentially large areas of these products, such as for flooring, baseboards, interior doors, window and door trims, and kitchen and bathroom cabinetry, could be used without causing indoor formaldehyde concentrations that result in CEQA

cancer risks that substantially exceed 10 per million for occupants with continuous occupancy.

Even composite wood products manufactured with CARB certified ultra low emitting formaldehyde (ULEF) resins do not insure that the indoor air will have concentrations of formaldehyde the meet the OEHHA cancer risks that substantially exceed 10 per million. The permissible emission rates for ULEF composite wood products are only 11-15% lower than the CARB Phase 2 emission rates. Only use of composite wood products made with no-added formaldehyde resins (NAF), such as resins made from soy, polyvinyl acetate, or methylene diisocyanate can insure that the OEHHA cancer risk of 10 per million is met.

If CARB Phase 2 compliant or ULEF composite wood products are utilized in construction, then the resulting indoor formaldehyde concentrations should be determined in the design phase using the specific amounts of each type of composite wood product, the specific formaldehyde emission rates, and the volume and outdoor air ventilation rates of the indoor spaces, and all feasible mitigation measures employed to reduce this impact (e.g. use less formaldehyde containing composite wood products and/or incorporate mechanical systems capable of higher outdoor air ventilation rates). See the procedure described earlier (i.e. Pre-Construction Building Material/Furnishing Formaldehyde Emissions Assessment) to insure that the materials selected achieve acceptable cancer risks from material off gassing of formaldehyde.

Alternatively, and perhaps a simpler approach, is to use only composite wood products (e.g. hardwood plywood, medium density fiberboard, particleboard) for all interior finish systems that are made with CARB approved no-added formaldehyde (NAF) resins.

EXHIBIT B

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October 1, 2021

Brian Flynn
Lozeau | Drury LLP
1939 Harrison Street, Suite 150
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Subject: **Comments on the Downtown Plan Program EIR Land Use Equivalency Program and 7th And Locust Development**

Dear Mr. Flynn,

We have reviewed the August 2021 Downtown Plan EIR Addendum ("Addendum") for the Downtown Plan Program EIR Land Use Equivalency Program and 7th and Locust Development ("Project") located in the City of Long Beach ("City"). The Project includes two components: 1) the Land Use Equivalency Program to allow for the reallocation and exchange of permitted land uses within the Certified PEIR; and 2) the 7th and Locust Development. Specifically, the 7th and Locust Development proposes to construct 79,374-SF of residential space with 108 units, 1,188-SF of retail space, and 135 parking spaces on the 0.52-acre site.

Our review concludes that the Addendum fails to adequately evaluate the Project's air quality and health risk impacts associated with the 7th and Locust Development. As a result, emissions and health risk impacts associated with construction and operation of the proposed Project are underestimated and inadequately addressed. An updated EIR should be prepared to adequately assess and mitigate the potential air quality and health risk impacts that the project may have on the surrounding environment.

Air Quality

Unsubstantiated Input Parameters Used to Estimate Project Emissions

The Addendum's air quality analysis relies on emissions calculated with CalEEMod.2016.3.2 (p. 63).[1] CalEEMod provides recommended default values based on site-specific information, such as land use

[1] CAPCOA (November 2017) CalEEMod User's Guide, http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4.

type, meteorological data, total lot acreage, project type and typical equipment associated with project type. If more specific project information is known, the user can change the default values and input project-specific values, but the California Environmental Quality Act ("CEQA") requires that such changes be justified by substantial evidence. Once all of the values are inputted into the model, the Project's construction and operational emissions are calculated, and "output files" are generated. These output files disclose to the reader what parameters are utilized in calculating the Project's air pollutant emissions and make known which default values are changed as well as provide justification for the values selected.

When reviewing the Project's CalEEMod output files, provided in the Air Quality Analysis ("AQA") and Greenhouse Gas Emissions Calculations ("GHG Report") as Appendix B and Appendix D to the Addendum, respectively, we found that several model inputs were not consistent with information disclosed in the Addendum. As a result, the Project's construction and operational emissions are underestimated. As a result, an updated EIR should be prepared to include an updated air quality analysis that adequately evaluates the impacts that construction and operation of the Project will have on local and regional air quality.

Unsubstantiated Reduction to CO_2 Intensity Factor

Review of the CalEEMod output files demonstrates that "The Locust Avenue Multi-Family Residential Building" model includes a reduction to the default CO_2 intensity factor (see excerpt below) (Appendix B, pp. 181, 222, 256; Appendix D, pp. 329).

Table Name	Column Name	Default Value	New Value
tblProjectCharacteristics	CO2IntensityFactor	702.44	502.65

As you can see in the excerpt above, the CO_2 intensity factor was decreased by approximately 28%, from the default value of 702.44- to 502.65-pounds per megawatt hour ("lbs/MWh"). As previously mentioned, the CalEEMod User's Guide requires any changes to model defaults be justified.[2] According to the "User Entered Comments & Non-Default Data" table, the justification provided for this change is:

> "CO2 Intensity Factor is based on 2020 forecast in Los Angeles County" (Appendix B, pp. 178, 219, 253; Appendix D; 326).

However, this justification is insufficient for two reasons. First, the "User Entered Comments and Non-Default Data" table fails to provide a verifiable source for the alleged 2020 forecast of Los Angeles County. Second, the Addendum and associated documents fail to mention the CO_2 intensity factor or justify this reduction whatsoever. As such, the revised CO_2 intensity factor is unsupported.

This unsubstantiated reduction presents an issue, as CalEEMod uses the CO_2 intensity factor to calculate the Project's GHG emissions associated with electricity use.[3] Thus, by including an unsubstantiated

[2] CalEEMod User Guide, *available at:* http://www.caleemod.com/, p. 2, 9
[3] "CalEEMod User's Guide." CAPCOA, November 2017, *available at:* http://www.caleemod.com/, p. 17.

change to the default CO_2 intensity factor, the model may underestimate the Project's potential GHG emissions and should not be relied upon to determine Project significance.

Unsubstantiated Changes to Architectural and Area Coating Areas

Review of the CalEEMod output files demonstrates that "The Locust Avenue Multi-Family Residential Building" model includes several changes to the default architectural and area coating areas (see excerpt below) (Appendix B, pp. 179, 220, 254; Appendix D, pp. 327).

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	3,344.00	3,273.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	10,032.00	9,818.00
tblArchitecturalCoating	ConstArea_Residential_Exterior	112,433.00	70,646.00
tblArchitecturalCoating	ConstArea_Residential_Interior	337,300.00	211,939.00
tblAreaCoating	Area_Nonresidential_Exterior	3344	3273
tblAreaCoating	Area_Nonresidential_Interior	10032	9818
tblAreaCoating	Area_Residential_Exterior	112433	70646
tblAreaCoating	Area_Residential_Interior	337300	211939

As previously mentioned, the CalEEMod User's Guide requires any changes to model defaults be justified.[4] However, no justification is provided by the "User Entered Comments and Non-Default Data" table. Furthermore, the Addendum incorporates Mitigation Measure ("MM") AQ-1(c), which includes the following provision:

> "Construct or build with materials that do not require painting" (p. 12).

However, the Addendum fails to specify the exact coating areas or square footage of building materials that would not require paint. As such, we cannot verify the revised architectural and area coating areas.

These unsubstantiated reductions present an issue, as CalEEMod uses the architectural and area coating areas to calculate the Project's reactive organic gas/volatile organic compound ("ROG"/"VOC") emissions.[5] Thus, by including unsubstantiated reductions to the default architectural and area coating areas, the model may underestimate the Project's construction-related and operational ROG/VOC emissions and should not be relied upon to determine Project significance.

Unsubstantiated Changes to Individual Construction Phase Lengths

Review of the CalEEMod output files demonstrates that "The Locust Avenue Multi-Family Residential Building" model includes several changes to the default individual construction phase lengths (see excerpt below) (Appendix B, pp. 180, 221, 255; Appendix D, pp. 328).

[4] CalEEMod User Guide, *available at:* http://www.caleemod.com/, p. 2, 9
[5] CalEEMod User Guide, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4, p. 35, 40.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	50.00
tblConstructionPhase	NumDays	200.00	440.00
tblConstructionPhase	NumDays	20.00	12.00
tblConstructionPhase	NumDays	4.00	100.00

As a result of these changes, the model includes a construction schedule as follows (see excerpt below) (Appendix B, pp. 186, 228, 262; Appendix D, pp. 334):

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days
1	Demolition	Demolition	9/1/2021	9/16/2021	5	12
2	Grading	Grading	9/17/2021	2/3/2022	5	100
3	Building Construction	Building Construction	2/4/2022	10/12/2023	5	440
4	Paving	Paving	10/13/2023	10/26/2023	5	10
5	Architectural Coating	Architectural Coating	10/27/2023	1/4/2024	5	50

As you can see in the excerpts above, the demolition phase length was decreased by roughly 40%, from the default value of 20 to 12 days; the grading phase length was increased by roughly 2,400%, from the default value of 4 to 100 days; the building construction phase length was increased by roughly 120%, from the default value of 200 to 440 days; and the architectural coating phase length was increased by roughly 400%, from the default value of 10 to 50 days. As previously mentioned, the CalEEMod User's Guide requires any changes to model defaults be justified.[6] According to the "User Entered Comments and Non-Default Data" table, the justification provided for these changes is:

> "Site preparation phase removed. Additional days added to demolition, grading, building construction, and architectural coating phases. Total construction approximately 28 months" (Appendix B, pp. 178, 219, 253; Appendix D; 326).

Furthermore, regarding the Project's anticipated construction schedule, the Addendum states:

> "The proposed 7th and Locust Development is anticipated to begin construction in the third quarter of 2021 and would last for 28 months with completion in early 2024" (p. 63).

Furthermore, the AQA provides the following tentative construction schedule (see excerpt below) (p. 9-10, Table D):

[6] CalEEMod User Guide, *available at:* http://www.caleemod.com/, p. 2, 9

Table D: Tentative Project Construction Schedule

Phase Number	Phase Name	Phase Start Date	Phase End Date	Number of Days/Week	Number of Days
1	Demolition	9/1/2021	9/16/2021	5	12
2	Grading	9/17/2021	2/3/2022	5	100
3	Building Construction	2/4/2022	10/12/2023	5	440
4	Paving	10/13/2023	10/26/2023	5	10
5	Architectural Coating	10/27/2023	1/4/2024	5	50

Source: Construction will begin in the third quarter of 2021 and scheduled completion of approximately 28 months (September 2020).

However, the source provided for the tentative construction schedule only reiterates the overall construction schedule indicated by the Addendum. This is insufficient, as according CalEEMod User's Guide:

> "CalEEMod was also designed to allow the user to change the defaults to reflect site- or project-specific information, when available, provided that the information is supported by substantial evidence as required by CEQA." [7]

Here, as the Addendum and above-mentioned source only justify a total construction duration of 28 months, the Project fails to provide substantial evidence to support the revised individual construction phase lengths. As such, we cannot verify the changes.

These unsubstantiated changes present an issue, as the construction emissions are improperly spread out over a longer period of time for some phases, but not for others. According to the CalEEMod User's Guide, each construction phase is associated with different emissions activities (see excerpt below).[8]

> ***Demolition*** involves removing buildings or structures.
>
> ***Site Preparation*** involves clearing vegetation (grubbing and tree/stump removal) and removing stones and other unwanted material or debris prior to grading.
>
> ***Grading*** involves the cut and fill of land to ensure that the proper base and slope is created for the foundation.
>
> ***Building Construction*** involves the construction of the foundation, structures and buildings.
>
> ***Architectural Coating*** involves the application of coatings to both the interior and exterior of buildings or structures, the painting of parking lot or parking garage striping, associated signage and curbs, and the painting of the walls or other components such as stair railings inside parking structures.
>
> ***Paving*** involves the laying of concrete or asphalt such as in parking lots, roads, driveways, or sidewalks.

As such, by disproportionately altering the individual construction phase lengths without proper justification, the model's calculations are altered and may underestimate emissions. Thus, by including unsubstantiated changes to the default individual construction phase lengths, the model may

[7] CalEEMod User Guide, *available at:* http://www.caleemod.com/, p. 12.
[8] "CalEEMod User's Guide." CAPCOA, November 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4, p. 31.

underestimate the Project's construction-related emissions and should not be relied upon to determine Project significance.

Unsubstantiated Reduction to the Hauling Trip Number

Review of the CalEEMod output files demonstrates that "The Locust Avenue Multi-Family Residential Building" model includes a reduction to the grading hauling trip number (see excerpt below) (Appendix B, pp. 181, 222, 256, 329).

Table Name	Column Name	Default Value	New Value
tblTripsAndVMT	HaulingTripNumber	2,475.00	1,958.00

As previously mentioned, the CalEEMod User's Guide requires any changes to model defaults be justified.[9] According to the "User Entered Comments and Non-Default Data" table, the justification provided for this change is:

> "Demolition truck haul trips. Export of soil 15 times daily during "mass excavation" grading phase" (Appendix B, pp. 178, 219, 253; Appendix D, pp. 326).

Furthermore, regarding the number of hauling trips associated with the grading phase, the Addendum states:

> "It is assumed that exporting the soil would require 1,958 total truck trips during the 100-day grading period" (p. 63).

However, these justifications are insufficient, as the Addendum cannot simply assume the Project's anticipated number of hauling trips. According to the CalEEMod User's Guide:

> "CalEEMod was also designed to allow the user to change the defaults to reflect site- or project-specific information, when available, provided that the information is supported by substantial evidence as required by CEQA."[10]

Here, as the Addendum and associated documents fail to provide substantial evidence to support the revised hauling trip number, we cannot verify the reduction.

This unsubstantiated reduction presents an issue, as CalEEMod uses the number of hauling trips to estimate the construction-related emissions associated with on-road vehicles.[11] By including an unsubstantiated reduction to the default hauling trip number, the model may underestimate the Project's construction-related emissions and should not be relied upon to determine Project significance.

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[9] CalEEMod User Guide, *available at:* http://www.caleemod.com/, p. 2, 9

[10] CalEEMod Model 2013.2.2 User's Guide, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/usersguideSept2016.pdf?sfvrsn=6, p. 12.

[11] CalEEMod User Guide, *available at:* http://www.caleemod.com/, p. 34.

Unsubstantiated Changes to the Solid Waste Generation Rate

Review of the CalEEMod output files demonstrates that "The Locust Avenue Multi-Family Residential Building" model includes a reduction to the default solid waste generation rate (see excerpt below) (Appendix B, pp. 181, 222, 256, 329).

Table Name	Column Name	Default Value	New Value
tblSolidWaste	SolidWasteGenerationRate	1.09	0.95

As previously mentioned, the CalEEMod User's Guide requires any changes to model defaults be justified.[12] However, no justification was provided "User Entered Comments and Non-Default Data" table. Furthermore, the Addendum and associated documents fail to mention the specific waste generation rates for the 7th and Locust Development or justify this change whatsoever. As such, we cannot verify the revised solid waste generation rate.

This unsubstantiated reduction presents an issue, as CalEEMod uses the solid waste generation rate to calculate the Project's operation GHG emissions associated with the disposal of solid waste into landfills.[13] Thus, by including an unsubstantiated reduction to the default solid waste generation rate, the model may underestimate the Project's operational GHG emissions and should not be relied upon to determine Project significance.

Unsubstantiated Changes to the Indoor and Outdoor Water Use Rates

Review of the CalEEMod output files demonstrates that the "The Locust Avenue Multi-Family Residential Building" model includes reductions to the default indoor and outdoor water use rates (see excerpt below) (Appendix B, pp. 181-182, 222-223, 256-257, 329-330).

Table Name	Column Name	Default Value	New Value
tblWater	IndoorWaterUseRate	361,205.12	315,675.06
tblWater	OutdoorWaterUseRate	23,055.65	20,149.47

As previously mentioned, the CalEEMod User's Guide requires any changes to model defaults be justified.[14] However, no justification was provided "User Entered Comments & Non-Default Data" table. Furthermore, the Addendum and associated documents fail to mention the specific indoor and outdoor water use rates for the 7th and Locust Development or justify these changes whatsoever. As such, we cannot verify the revised indoor and outdoor water use rates.

These unsubstantiated reductions present an issue, as CalEEMod uses indoor and outdoor water use rates to estimate the amount of wastewater, which has direct emissions of GHGs.[15] By including unsubstantiated reductions to the default indoor and outdoor water use rates, the model

[12] CalEEMod User Guide, *available at:* http://www.caleemod.com/, p. 2, 9
[13] CalEEMod User Guide, *available at:* http://www.caleemod.com/, p. 46.
[14] CalEEMod User Guide, *available at:* http://www.caleemod.com/, p. 2, 9
[15] CalEEMod User Guide, *available at:* http://www.caleemod.com/, p. 44, 45.

underestimates the Project's water-related operational emissions and should not be relied upon to determine Project significance.

Diesel Particulate Matter Health Risk Emissions Inadequately Evaluated

The Addendum concludes that the 7th and Locust Development would have a less-than-significant health risk impact without conducting a quantified construction or operational health risk analysis ("HRA") (p. 70-71). Specifically, regarding potential health risk impacts associated with construction of the 7th and Locust Development, the Addendum states:

> "Project construction activities would result in the generation of DPM emissions from the use of off-road diesel equipment required for demolition, site grading and excavation, building construction, paving, and architectural coating. As stated in the Certified PEIR, because the use of off-road heavy-duty diesel equipment during construction of the project would be temporary, that DPM is highly dispersive (Zhu et al. 2002), and that USEPA and CARB regulations that minimize exhaust emissions are mandated to be implemented by construction contractors, construction-related TAC emissions would not expose sensitive receptors to substantial emissions of TACs. Furthermore, as discussed above, project construction would be required to implement Certified PEIR Mitigation Measure AQ-1(a), which includes enhanced exhaust control practices on off-road vehicle and off-road construction equipment. As shown previously in Table 3 and Table 5, project construction emissions, including exhaust PM10 and PM2.5, would be below the SCAQMD regional and localized significance thresholds and within the construction emissions identified in the Certified PEIR. As a result, the 7th and Locust Development, and the Equivalency Program, would not result in new significant construction TAC impacts and would not result in a substantial increase in the severity of impacts identified in the Certified PEIR" (p. 70).

As demonstrated above, the Addendum concludes that the Project would result in a less-than-significant construction-related health risk impact because the limited use of heavy-duty diesel equipment, highly dispersive properties of diesel particulate matter, and implementation of USEPA and CARB regulations would not result in substantial toxic air contaminant ("TAC") emissions. Furthermore, regarding potential health risk impacts associated with Project operation, the Addendum states:

> "The 7th and Locust Development's commercial land uses would consist of retail uses. Even if such uses would include dry cleaning facilities, the use of perchloroethylene would be prohibited per SCAQMD Rule 1421.10 Additionally, the project's retail uses would be neighborhood serving and would not generate substantial truck trips of more than 100 trucks per day, or 40 trucks equipped with Transport Refrigeration Units (TRUs). While minor incidental TAC emissions from sources such as the use of cleaning products and solvents could result from the project, these TAC emissions sources would not result in substantial exposures to on- or off-site sensitive receptors that would result in an exceedance of health risk standards" (p. 70).

As demonstrated above, the Addendum concludes that the Project would result in a less-than-significant operational health risk impact because the proposed land uses would not include dry cleaning services

or generate substantial truck trips. However, the Addendum's evaluation of the potential health risk impacts associated with the 7th and Locust Development, as well as the subsequent less-than-significant impact conclusion, is incorrect for three reasons.

First, the Addendum fails to quantitatively evaluate the construction-related and operational TACs associated with the 7th and Locust Development or make a reasonable effort to connect these emissions to potential health risk impacts posed to nearby existing sensitive receptors. This is incorrect, as construction of the proposed Project will produce emissions of diesel particulate matter ("DPM") through the exhaust stacks of construction equipment over a potential construction duration of 28 months (p. 63). Furthermore, the Addendum indicates that the proposed land uses are expected to generate approximately 534 average daily vehicle trips, which will generate additional exhaust emissions and continue to expose nearby sensitive receptors to DPM emissions (p. 65). However, the Addendum fails to evaluate the potential Project-generated TACs or indicate the concentrations at which such pollutants would trigger adverse health effects. Thus, without making a reasonable effort to connect the Project's construction-related and operational TAC emissions to the potential health risks posed to nearby receptors, the Addendum is inconsistent with CEQA's requirement to correlate the increase in emissions generated by the 7th and Locust Development with the potential adverse impacts on human health.

Second, the Addendum's conclusion is inconsistent with guidance from the Office of Environmental Health Hazard Assessment ("OEHHA"), the organization responsible for providing guidance on conducting HRAs in California, as well as local air district guidelines. OEHHA released its most recent *Risk Assessment Guidelines: Guidance Manual for Preparation of Health Risk Assessments* in February 2015. This guidance document describes the types of projects that warrant the preparation of an HRA. The OEHHA document recommends that all short-term projects lasting at least two months be evaluated for cancer risks to nearby sensitive receptors. As the Project's construction duration vastly exceeds the 2-month requirement set forth by OEHHA, it is clear that the Project meets the threshold warranting a quantified HRA under OEHHA guidance. Furthermore, the OEHHA document recommends that exposure from projects lasting more than 6 months be evaluated for the duration of the project and recommends that an exposure duration of 30 years be used to estimate individual cancer risk for the maximally exposed individual resident ("MEIR"). Even though we were not provided with the expected lifetime of the Project, we can reasonably assume that the Project will operate for at least 30 years, if not more. Therefore, we recommend that health risk impacts from Project operation also be evaluated, as a 30-year exposure duration vastly exceeds the 6-month requirement set forth by OEHHA. These recommendations reflect the most recent state health risk policies, and as such, we recommend that an analysis of health risk impacts posed to nearby sensitive receptors from Project-generated DPM emissions be included in an updated EIR for the Project.

Third, by claiming a less-than-significant impact without conducting a quantified construction or operational HRA for nearby, existing sensitive receptors, the Addendum fails to compare the Project's cumulative excess cancer risk to the applicable SCAQMD numeric threshold of 10 in one million, and lacks evidence to support its conclusion that the health risk would be under the threshold (p. 22, Table

9).[16] Thus, pursuant to CEQA and SCAQMD guidance, an analysis of the health risk posed to nearby, existing receptors from construction and operation of the 7th and Locust Development should have been conducted.

Screening-Level Analysis Indicates a Potentially Significant Health Risk Impact

In order to conduct our screening-level risk analysis we relied upon AERSCREEN, which is a screening level air quality dispersion model.[17] The model replaced SCREEN3, and AERSCREEN is included in the OEHHA[18] and the California Air Pollution Control Officers Associated ("CAPCOA")[19] guidance as the appropriate air dispersion model for Level 2 health risk screening analyses ("HRSAs"). A Level 2 HRSA utilizes a limited amount of site-specific information to generate maximum reasonable downwind concentrations of air contaminants to which nearby sensitive receptors may be exposed. If an unacceptable air quality hazard is determined to be possible using AERSCREEN, a more refined modeling approach is required prior to approval of the Project.

In order to estimate the health risk impacts posed to residential sensitive receptors as a result of the Project's construction-related and operational TAC emissions, we prepared a preliminary HRA using the annual PM_{10} exhaust estimates from the Addendum's CalEEMod output files. Consistent with recommendations set forth by OEHHA, we assumed residential exposure begins during the third trimester stage of life. The CalEEMod model indicates that construction activities will generate approximately 404 pounds of DPM over the 852-day construction period.[20] The AERSCREEN model relies on a continuous average emission rate to simulate maximum downward concentrations from point, area, and volume emission sources. To account for the variability in equipment usage and truck trips over Project construction, we calculated an average DPM emission rate by the following equation:

$$Emission\ Rate\ \left(\frac{grams}{second}\right) = \frac{404.3\ lbs}{852\ days} \times \frac{453.6\ grams}{lbs} \times \frac{1\ day}{24\ hours} \times \frac{1\ hour}{3{,}600\ seconds} = \mathbf{0.00249\ g/s}$$

Using this equation, we estimated a construction emission rate of 0.00249 grams per second ("g/s"). Subtracting the 852-day construction period from the total residential duration of 30 years, we assumed that after Project construction, the sensitive receptor would be exposed to the Project's operational DPM for an additional 27.67 years, approximately. The operational CalEEMod emissions indicate that operational activities will generate approximately 36 pounds of DPM per year throughout operation. Applying the same equation used to estimate the construction DPM rate, we estimated the following emission rate for Project operation:

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[16] "South Coast AQMD Air Quality Significance Thresholds." SCAQMD, April 2019, *available at:* http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf.
[17] U.S. EPA (April 2011) AERSCREEN Released as the EPA Recommended Screening Model, http://www.epa.gov/ttn/scram/guidance/clarification/20110411_AERSCREEN_Release_Memo.pdf
[18] "Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments." OEHHA, February 2015, *available at:* http://oehha.ca.gov/air/hot_spots/2015/2015GuidanceManual.pdf
[19] CAPCOA (July 2009) Health Risk Assessments for Proposed Land Use Projects, http://www.capcoa.org/wp-content/uploads/2012/03/CAPCOA_HRA_LU_Guidelines_8-6-09.pdf.
[20] See Attachment A for calculations.

$$Emission\ Rate\ \left(\frac{grams}{second}\right) = \frac{35.8\ lbs}{365\ days} \times \frac{453.6\ grams}{lbs} \times \frac{1\ day}{24\ hours} \times \frac{1\ hour}{3{,}600\ seconds} = \mathbf{0.000515\ g/s}$$

Using this equation, we estimated an operational emission rate of 0.000515 g/s. Construction and operational activity was simulated as a 0.52-acre rectangular area source in AERSCREEN with dimensions of 64.87- by 32.44-meters. A release height of three meters was selected to represent the height of exhaust stacks on operational equipment and other heavy-duty vehicles, and an initial vertical dimension of one and a half meters was used to simulate instantaneous plume dispersion upon release. An urban meteorological setting was selected with model-default inputs for wind speed and direction distribution.

The AERSCREEN model generates maximum reasonable estimates of single-hour DPM concentrations from the Project site. EPA guidance suggests that in screening procedures, the annualized average concentration of an air pollutant be estimated by multiplying the single-hour concentration by 10%.[21] Regarding the nearest sensitive receptors, the Addendum states that "[t]he proposed 7th and Locust Development is located within 25 meters of residential uses" (p. 67). Thus, the single-hour concentration estimated by AERSCREEN for Project construction is approximately 18.70 µg/m^3 DPM at approximately 25 meters downwind. Multiplying this single-hour concentration by 10%, we get an annualized average concentration of 1.870 µg/m^3 for Project construction at the MEIR. For Project operation, the single-hour concentration estimated by AERSCREEN is 3.843 µg/m^3 DPM at approximately 25 meters downwind. Multiplying this single-hour concentration by 10%, we get an annualized average concentration of 0.3843 µg/m^3 for Project operation at the MEIR.

We calculated the excess cancer risk to the MEIR using applicable HRA methodologies prescribed by OEHHA. Consistent with the 852-day construction schedule included in the Project's CalEEMod output files, the annualized average concentration for Project construction was used for the entire third trimester of pregnancy (0.25 years), infantile stage of life (0 – 2 years), and 0.08 years of the child stage of life (2 – 16 years); and the annualized averaged concentration for operation was used for the remainder of the 30-year exposure period, which makes up the remaining child stage of life and the entire adult stage of life (16 – 30 years).

Consistent with OEHHA guidance and recommended by the SCAQMD, BAAQMD, and SJVAPCD guidance, we used Age Sensitivity Factors ("ASF") to account for the heightened susceptibility of young children to

[21] "Screening Procedures for Estimating the Air Quality Impact of Stationary Sources Revised." EPA, 1992, *available at*: http://www.epa.gov/ttn/scram/guidance/guide/EPA-454R-92-019_OCR.pdf; *see also* "Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments." OEHHA, February 2015, *available at:* https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf p. 4-36.

the carcinogenic toxicity of air pollution.[22, 23, 24] According to this guidance, the quantified cancer risk should be multiplied by a factor of ten during the third trimester of pregnancy and during the first two years of life (infant), as well as multiplied by a factor of three during the child stage of life (2 – 16 years). We also included the quantified cancer risk without adjusting for the heightened susceptibility of young children to the carcinogenic toxicity of air pollution in accordance with older OEHHA guidance from 2003. This guidance utilizes a less health protective scenario than what is currently recommended by SCAQMD, the air quality district with jurisdiction over the City, and several other air districts in the state. Furthermore, in accordance with the guidance set forth by OEHHA, we used the 95th percentile breathing rates for infants.[25] Finally, according to SCAQMD guidance, we used a Fraction of Time At Home ("FAH") Value of 1 for the 3rd trimester and infant receptors.[26] We used a cancer potency factor of 1.1 (mg/kg-day)$^{-1}$ and an averaging time of 25,550 days. The results of our calculations are shown below.

The Maximally Exposed Individual at an Existing Residential Receptor							
Age Group	**Emissions Source**	**Duration** (years)	**Concentration** (ug/m3)	**Breathing Rate** (L/kg-day)	**Cancer Risk** (without ASFs*)	**ASF**	**Cancer Risk** (with ASFs*)
3rd Trimester	Construction	0.25	1.87	361	2.54E-06	10	**2.54E-05**
Infant (Age 0 - 2)	Construction	2	1.87	1090	6.14E-05	10	**6.14E-04**
Child (Age 2 - 16)	*Construction*	*0.08*	*1.87*	*572*	*1.36E-06*	3	**1.42E-04**
	Operation	*13.92*	*0.3843*	*572*	*4.61E-05*		
	Total	14			4.75E-05		

[22] "Draft Environmental Impact Report (DEIR) for the Proposed The Exchange (SCH No. 2018071058)." SCAQMD, March 2019, *available at:* http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2019/march/RVC190115-03.pdf?sfvrsn=8, p. 4.

[23] "California Environmental Quality Act Air Quality Guidelines." BAAQMD, May 2017, *available at:* http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en, p. 56; see also "Recommended Methods for Screening and Modeling Local Risks and Hazards." BAAQMD, May 2011, *available at:* http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/BAAQMD%20Modeling%20Approach.ashx, p. 65, 86.

[24] "Update to District's Risk Management Policy to Address OEHHA's Revised Risk Assessment Guidance Document." SJVAPCD, May 2015, *available at:* https://www.valleyair.org/busind/pto/staff-report-5-28-15.pdf, p. 8, 20, 24.

[25] "Supplemental Guidelines for Preparing Risk Assessments for the Air Toxics 'Hot Spots' Information and Assessment Act," July 2018, *available at:* http://www.aqmd.gov/docs/default-source/planning/risk-assessment/ab2588supplementalguidelines.pdf, p. 16.
"Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments." OEHHA, February 2015, *available at:* https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf

[26] "Risk Assessment Procedures for Rules 1401, 1401.1, and 212." SCAQMD, August 2017, *available at:* http://www.aqmd.gov/docs/default-source/rule-book/Proposed-Rules/1401/riskassessmentprocedures_2017_080717.pdf, p. 7.

Adult (Age 16 - 30)	Operation	14	0.3843	261	1.54E-05	1	**1.54E-05**
Lifetime		**30**			**1.27E-04**		**7.98E-04**

* We, along with CARB and SCAQMD, recommend using the more updated and health protective 2015 OEHHA guidance, which includes ASFs.

As demonstrated in the table above, the mitigated excess cancer risks for the 3rd trimester of pregnancy, infants, children, and adults at the MEIR located approximately 25 meters away, over the course of Project construction and operation, utilizing ASFs, are approximately 25.4, 614, 142, and 15.4 in one million, respectively. The excess cancer risk over the course of a residential lifetime (30 years), utilizing ASFs, is approximately 798 in one million. The 3rd trimester, infant, child, adult, and lifetime cancer risks exceed the SCAQMD threshold of 10 in one million, thus resulting in a potentially significant impact not previously addressed or identified by the Addendum.

Utilizing ASFs is the most conservative, health-protective analysis according to the most recent guidance by OEHHA and reflects recommendations from the air district. Results without ASFs are presented in the table above, although we do not recommend utilizing these values for health risk analysis. Regardless, the excess cancer risks for the 3rd trimester of pregnancy, infants, children, and adults at the MEIR located approximately 25 meters away, over the course of Project construction and operation, without ASFs, are approximately 2.54, 61.4, 47.5, and 15.4 in one million, respectively. The excess cancer risk over the course of a residential lifetime (30 years), without ASFs, is approximately 127 in one million. The infant, child, and lifetime cancer risks exceed the SCAQMD threshold of 10 in one million, thus resulting in a potentially significant impact not previously addressed or identified by the Addendum. While we recommend the use of ASFs, the Project's cancer risk without ASFs, as estimated by SWAPE, exceeds the SCAQMD threshold regardless.

An agency must include an analysis of health risks that connects the Project's air emissions with the health risk posed by those emissions. Our analysis represents a screening-level HRA, which is known to be conservative and tends to err on the side of health protection. [27] The purpose of the screening-level construction and operational HRA shown above is to demonstrate the link between the proposed Project's emissions and the potential health risk. Our screening-level HRA demonstrates that construction and operation of the Project could result in a potentially significant health risk impact, when correct exposure assumptions and up-to-date, applicable guidance are used. Therefore, since our screening-level HRA indicates a potentially significant impact, the City should prepare an updated EIR with an HRA which makes a reasonable effort to connect the Project's air quality emissions and the potential health risks posed to nearby receptors. Thus, the City should prepare an updated, quantified air pollution model as well as an updated, quantified refined health risk analysis which adequately and accurately evaluates health risk impacts associated with both Project construction and operation.

[27] "Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments." OEHHA, February 2015, *available at:* https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf, p. 1-5

Disclaimer

SWAPE has received limited discovery regarding this project. Additional information may become available in the future; thus, we retain the right to revise or amend this report when additional information becomes available. Our professional services have been performed using that degree of care and skill ordinarily exercised, under similar circumstances, by reputable environmental consultants practicing in this or similar localities at the time of service. No other warranty, expressed or implied, is made as to the scope of work, work methodologies and protocols, site conditions, analytical testing results, and findings presented. This report reflects efforts which were limited to information that was reasonably accessible at the time of the work, and may contain informational gaps, inconsistencies, or otherwise be incomplete due to the unavailability or uncertainty of information obtained or provided by third parties.

Sincerely,

Matt Hagemann, P.G., C.Hg.

Paul E. Rosenfeld, Ph.D.

Attachment A: Health Risk Calculations
Attachment B: AERSCREEN Output Files
Attachment C: Matt Hagemann CV
Attachment D: Paul E. Rosenfeld CV

Attachment A

Construction

2021	
Annual Emissions (tons/year)	0.0276
Daily Emissions (lbs/day)	0.151232877
Construction Duration (days)	122
Total DPM (lbs)	18.45041096
Total DPM (g)	8369.106411
Start Date	9/1/2021
End Date	1/1/2022
Construction Days	122

2022	
Annual Emissions (tons/year)	0.1062
Daily Emissions (lbs/day)	0.581917808
Construction Duration (days)	365
Total DPM (lbs)	212.4
Total DPM (g)	96344.64
Start Date	1/1/2022
End Date	1/1/2023
Construction Days	365

2023	
Annual Emissions (tons/year)	0.0867
Daily Emissions (lbs/day)	0.475068493
Construction Duration (days)	365
Total DPM (lbs)	173.4
Total DPM (g)	78654.24
Start Date	1/1/2023
End Date	1/1/2024
Construction Days	365

2023	
Annual Emissions (tons/year)	0.00019
Daily Emissions (lbs/day)	0.001041096
Construction Duration (days)	3
Total DPM (lbs)	0.003123288
Total DPM (g)	1.416723288
Start Date	1/1/2024
End Date	1/4/2024
Construction Days	3

Total	
Total DPM (lbs)	404.250411
Total DPM (g)	183367.9864
Total Construction Days	852
Emission Rate (g/s)	0.00249098
Release Height (meters)	3
Total Acreage	0.52
Max Horizontal (meters)	64.87
Min Horizontal (meters)	32.44
Initial Vertical Dimension (meters)	1.5
Setting	Urban
Population	466,776
Start Date	9/1/2021
End Date	1/1/2024
Total Construction Days	852
Total Years of Construction	2.33
Total Years of Operation	27.67

Operation

Emission Rate	
Annual Emissions (tons/year)	0.0179
Daily Emissions (lbs/day)	0.098082192
Emission Rate (g/s)	0.000514932
Release Height (meters)	3
Total Acreage	0.52
Max Horizontal (meters)	64.87
Min Horizontal (meters)	32.44
Initial Vertical Dimension (meters)	1.5
Setting	Urban
Population	466,776

Total Pounds of DPM	
Total DPM (lbs)	35.8

Start date and time 09/23/21 11:39:43

AERSCREEN 16216

7th and Locust Development Construction

7th and Locust Development Construction

---------- DATA ENTRY VALIDATION ----------

	METRIC	ENGLISH
** AREADATA **	---	---
Emission Rate:	0.249E-02 g/s	0.198E-01 lb/hr
Area Height:	3.00 meters	9.84 feet
Area Source Length:	64.87 meters	212.83 feet
Area Source Width:	32.44 meters	106.43 feet
Vertical Dimension:	1.50 meters	4.92 feet
Model Mode:	URBAN	
Population:	466776	
Dist to Ambient Air:	1.0 meters	3. feet

** BUILDING DATA **

No Building Downwash Parameters

** TERRAIN DATA **

No Terrain Elevations

Source Base Elevation: 0.0 meters 0.0 feet

Probe distance: 5000. meters 16404. feet

No flagpole receptors

No discrete receptors used

** FUMIGATION DATA **

No fumigation requested

** METEOROLOGY DATA **

Min/Max Temperature: 250.0 / 310.0 K -9.7 / 98.3 Deg F

Minimum Wind Speed: 0.5 m/s

```
 Anemometer Height:   10.000 meters

 Dominant Surface Profile: Urban

 Dominant Climate Type:    Average Moisture

 Surface friction velocity (u*): not adjusted

DEBUG OPTION ON




 AERSCREEN output file:

 2021.09.23_7thandLocust_Construction.out



 *** AERSCREEN Run is Ready to Begin



 No terrain used, AERMAP will not be run
**************************************************

SURFACE CHARACTERISTICS & MAKEMET

Obtaining surface characteristics...
```

Using AERMET seasonal surface characteristics for Urban with Average Moisture

Season	Albedo	Bo	zo
Winter	0.35	1.50	1.000
Spring	0.14	1.00	1.000
Summer	0.16	2.00	1.000
Autumn	0.18	2.00	1.000

Creating met files aerscreen_01_01.sfc & aerscreen_01_01.pfl

Creating met files aerscreen_02_01.sfc & aerscreen_02_01.pfl

Creating met files aerscreen_03_01.sfc & aerscreen_03_01.pfl

Creating met files aerscreen_04_01.sfc & aerscreen_04_01.pfl

Buildings and/or terrain present or rectangular area source, skipping probe

FLOWSECTOR started 09/23/21 11:41:12

****

Running AERMOD

Processing Winter

Processing surface roughness sector 1

```
**************************************************
Processing wind flow sector   1

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector   0

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

**************************************************
Processing wind flow sector   2

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector   5

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

**************************************************
Processing wind flow sector   3

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector  10

    ********   WARNING MESSAGES   ********
               ***  NONE  ***
```

```
**************************************************

Processing wind flow sector   4

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector  15

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

**************************************************

Processing wind flow sector   5

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector  20

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

**************************************************

Processing wind flow sector   6

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector  25

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

**************************************************
```

```
Processing wind flow sector   7

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector  30

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

 *****************************************

  Running AERMOD

 Processing Spring

Processing surface roughness sector  1

**************************************************

Processing wind flow sector   1

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector   0

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

**************************************************

Processing wind flow sector   2

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector   5
```

```
    ********   WARNING MESSAGES    ********

               ***  NONE  ***


**************************************************

Processing wind flow sector   3


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector  10


    ********   WARNING MESSAGES    ********

               ***  NONE  ***


**************************************************

Processing wind flow sector   4


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector  15


    ********   WARNING MESSAGES    ********

               ***  NONE  ***


**************************************************

Processing wind flow sector   5


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector  20
```

```
    ********   WARNING MESSAGES   ********

               ***  NONE  ***


**************************************************

Processing wind flow sector   6


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector  25


    ********   WARNING MESSAGES   ********

               ***  NONE  ***


**************************************************

Processing wind flow sector   7


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector  30


    ********   WARNING MESSAGES   ********

               ***  NONE  ***

 ****************************************


  Running AERMOD

 Processing Summer


Processing surface roughness sector  1
```

```
**************************************************

Processing wind flow sector   1

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector   0

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

**************************************************

Processing wind flow sector   2

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector   5

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

**************************************************

Processing wind flow sector   3

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector  10

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

**************************************************
```

```
Processing wind flow sector   4

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector  15

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

**************************************************
Processing wind flow sector   5

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector  20

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

**************************************************
Processing wind flow sector   6

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector  25

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

**************************************************
Processing wind flow sector   7
```

```
 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector  30


    ********   WARNING MESSAGES   ********

               ***  NONE  ***

 ******************************************


  Running AERMOD

 Processing Autumn


Processing surface roughness sector  1


**************************************************

Processing wind flow sector   1


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector   0


    ********   WARNING MESSAGES   ********

               ***  NONE  ***


**************************************************

Processing wind flow sector   2


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector   5
```

```
    ********   WARNING MESSAGES   ********

               ***  NONE  ***


**************************************************

Processing wind flow sector   3


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector  10


    ********   WARNING MESSAGES   ********

               ***  NONE  ***


**************************************************

Processing wind flow sector   4


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector  15


    ********   WARNING MESSAGES   ********

               ***  NONE  ***


**************************************************

Processing wind flow sector   5


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector  20


    ********   WARNING MESSAGES   ********
```

```
               ***  NONE  ***

**************************************************
Processing wind flow sector   6

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector  25

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

**************************************************
Processing wind flow sector   7

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector  30

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

FLOWSECTOR   ended 09/23/21 11:41:18

REFINE       started 09/23/21 11:41:18

 AERMOD Finishes Successfully for REFINE stage 3 Winter sector   0

    ********   WARNING MESSAGES   ********
```

*** NONE ***

REFINE ended 09/23/21 11:41:19

****

AERSCREEN Finished Successfully

With no errors or warnings

Check log file for details

****

Ending date and time 09/23/21 11:41:21

Concentration	Distance	Elevation	Diag	Season/Month	Zo	sector	Date	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	HT	REF TA	HT
0.14828E+02	1.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0	
0.18705E+02	25.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0	
* 0.19577E+02	33.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0	
0.11467E+02	50.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0	
0.60979E+01	75.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0	
0.39760E+01	100.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0	
0.28784E+01	125.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0	
0.22167E+01	150.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0	
0.17827E+01	175.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0	
0.14772E+01	200.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0	
0.12526E+01	225.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0	
0.10813E+01	250.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0	
0.94675E+00	275.00	0.00	5.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0	
0.83893E+00	300.00	0.00	5.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0	
0.75089E+00	325.00	0.00	5.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0	
0.67786E+00	350.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0	
0.61642E+00	375.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0	
0.56387E+00	400.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0	
0.51854E+00	425.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0	
0.47905E+00	450.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0	
0.44450E+00	475.00	0.00	5.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0	
0.41406E+00	500.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0	
0.38708E+00	525.00	0.00	10.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0	
0.36300E+00	550.00	0.00	10.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0	
0.34141E+00	575.00	0.00	15.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0	
0.32196E+00	600.00	0.00	10.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0								

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1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.30533E+00     625.00     0.00  0.0      Winter     0-360   10011001  -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.28926E+00     650.00     0.00  0.0      Winter     0-360   10011001  -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.27461E+00     675.00     0.00  0.0      Winter     0-360   10011001  -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.26120E+00     700.00     0.00  0.0      Winter     0-360   10011001  -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.24888E+00     725.00     0.00  0.0      Winter     0-360   10011001  -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.23753E+00     750.00     0.00  0.0      Winter     0-360   10011001  -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.22705E+00     775.00     0.00  5.0      Winter     0-360   10011001  -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.21735E+00     800.00     0.00  0.0      Winter     0-360   10011001  -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.20834E+00     825.00     0.00  5.0      Winter     0-360   10011001  -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.19996E+00     850.00     0.00  0.0      Winter     0-360   10011001  -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.19215E+00     875.00     0.00  0.0      Winter     0-360   10011001  -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.18485E+00     900.00     0.00 15.0      Winter     0-360   10011001  -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.17802E+00     925.00     0.00  0.0      Winter     0-360   10011001  -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.17161E+00     950.00     0.00  0.0      Winter     0-360   10011001  -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.16559E+00     975.00     0.00  0.0      Winter     0-360   10011001  -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.15994E+00    1000.00     0.00  5.0      Winter     0-360   10011001  -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.15460E+00    1025.00     0.00 15.0      Winter     0-360   10011001  -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.14957E+00    1050.00     0.00  5.0      Winter     0-360   10011001  -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.14481E+00    1075.00     0.00  0.0      Winter     0-360   10011001  -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.14032E+00    1100.00     0.00  5.0      Winter     0-360   10011001  -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.13605E+00    1125.00     0.00 20.0      Winter     0-360   10011001  -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.13201E+00    1149.99     0.00 15.0      Winter     0-360   10011001  -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.12818E+00    1175.00     0.00  0.0      Winter     0-360   10011001  -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.12453E+00    1200.00     0.00  5.0      Winter     0-360   10011001  -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.12106E+00    1225.00     0.00 20.0      Winter     0-360   10011001  -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.11774E+00    1250.00     0.00  0.0      Winter     0-360   10011001  -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.11459E+00    1275.00     0.00  0.0      Winter     0-360   10011001  -1.30  0.043 -9.000  0.020 -999.   21.     6.0
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1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.11158E+00    1300.00     0.00  5.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.10870E+00    1325.00     0.00  0.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.10594E+00    1350.00     0.00  0.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.10331E+00    1375.00     0.00 30.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.10079E+00    1400.00     0.00  0.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.98372E-01    1425.00     0.00 15.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.96053E-01    1450.00     0.00 20.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.93827E-01    1475.00     0.00 25.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.91689E-01    1500.00     0.00  5.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.89634E-01    1525.00     0.00 10.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.87658E-01    1550.00     0.00 20.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.85756E-01    1574.99     0.00 25.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.83923E-01    1600.00     0.00 10.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.82158E-01    1625.00     0.00 10.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.80457E-01    1650.00     0.00 20.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.78815E-01    1675.00     0.00 10.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.77230E-01    1700.00     0.00 10.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.75700E-01    1725.00     0.00 10.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.74222E-01    1750.00     0.00 10.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.72793E-01    1775.00     0.00 10.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.71411E-01    1800.00     0.00 25.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.70074E-01    1824.99     0.00 15.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.68779E-01    1850.00     0.00 10.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.67525E-01    1875.00     0.00 10.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.66311E-01    1899.99     0.00 25.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.65134E-01    1924.99     0.00  5.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.63992E-01    1950.00     0.00  0.0      Winter     0-360   10011001   -1.30  0.043 -9.000  0.020 -999.   21.     6.0
```

1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.62885E-01 1975.00 0.00 5.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.61810E-01 2000.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.60767E-01 2025.00 0.00 5.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.59754E-01 2050.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.58770E-01 2075.00 0.00 5.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.57814E-01 2100.00 0.00 20.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.56884E-01 2125.00 0.00 5.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.55980E-01 2150.00 0.00 30.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.55100E-01 2175.00 0.00 5.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.54244E-01 2200.00 0.00 20.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.53411E-01 2224.99 0.00 15.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.52600E-01 2250.00 0.00 15.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.51810E-01 2275.00 0.00 5.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.51040E-01 2300.00 0.00 20.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.50290E-01 2325.00 0.00 5.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.49559E-01 2350.00 0.00 25.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.48845E-01 2375.00 0.00 5.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.48150E-01 2400.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.47471E-01 2425.00 0.00 5.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.46809E-01 2449.99 0.00 25.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.46163E-01 2475.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.45532E-01 2500.00 0.00 15.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.44916E-01 2525.00 0.00 15.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.44314E-01 2550.00 0.00 25.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.43726E-01 2575.00 0.00 5.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.43151E-01 2600.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.42589E-01 2625.00 0.00 5.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0

1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.42040E-01 2650.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.41503E-01 2675.00 0.00 15.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.40978E-01 2700.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.40464E-01 2725.00 0.00 20.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.39961E-01 2750.00 0.00 10.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.39469E-01 2775.00 0.00 10.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.38987E-01 2800.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.38516E-01 2825.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.38054E-01 2850.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.37602E-01 2875.00 0.00 10.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.37159E-01 2900.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.36725E-01 2925.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.36299E-01 2950.00 0.00 5.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.35882E-01 2975.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.35474E-01 3000.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.35073E-01 3025.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.34680E-01 3050.00 0.00 5.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.34295E-01 3075.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.33917E-01 3100.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.33546E-01 3125.00 0.00 10.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.33182E-01 3150.00 0.00 5.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.32825E-01 3174.99 0.00 10.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.32474E-01 3200.00 0.00 5.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.32130E-01 3225.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.31792E-01 3250.00 0.00 5.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.31461E-01 3275.00 0.00 20.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.31135E-01 3300.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0

1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.30815E-01 3325.00 0.00 15.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.30501E-01 3350.00 0.00 5.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.30192E-01 3375.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.29889E-01 3400.00 0.00 5.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.29590E-01 3425.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.29297E-01 3450.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.29009E-01 3475.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.28726E-01 3500.00 0.00 20.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.28448E-01 3525.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.28174E-01 3550.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.27905E-01 3575.00 0.00 15.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.27640E-01 3600.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.27379E-01 3625.00 0.00 30.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.27123E-01 3650.00 0.00 25.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.26871E-01 3675.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.26623E-01 3700.00 0.00 20.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.26378E-01 3725.00 0.00 15.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.26138E-01 3750.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.25901E-01 3775.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.25668E-01 3800.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.25439E-01 3825.00 0.00 5.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.25214E-01 3850.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.24991E-01 3875.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.24772E-01 3900.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.24557E-01 3925.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.24344E-01 3950.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.24135E-01 3975.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0

1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.23929E-01 4000.00 0.00 10.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.23726E-01 4025.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.23526E-01 4050.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.23328E-01 4075.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.23134E-01 4100.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.22942E-01 4125.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.22753E-01 4150.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.22567E-01 4175.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.22383E-01 4200.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.22202E-01 4225.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.22024E-01 4250.00 0.00 15.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.21848E-01 4275.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.21674E-01 4300.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.21503E-01 4325.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.21334E-01 4350.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.21168E-01 4375.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.21003E-01 4400.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.20841E-01 4425.00 0.00 10.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.20681E-01 4450.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.20523E-01 4475.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.20367E-01 4500.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.20214E-01 4525.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.20062E-01 4550.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.19912E-01 4575.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.19764E-01 4600.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.19618E-01 4625.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.19474E-01 4650.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0

1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.19332E-01 4675.00 0.00 15.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.19191E-01 4700.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.19052E-01 4725.00 0.00 25.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.18915E-01 4750.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.18780E-01 4775.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.18646E-01 4800.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.18514E-01 4825.00 0.00 15.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.18384E-01 4850.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.18255E-01 4875.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.18128E-01 4900.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.18002E-01 4924.99 0.00 15.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.17878E-01 4950.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.17755E-01 4975.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.17634E-01 5000.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0

Start date and time 09/23/21 11:41:45

AERSCREEN 16216

7th and Locust Development Operation

7th and Locust Development Operation

---------- DATA ENTRY VALIDATION ----------

	METRIC	ENGLISH
** AREADATA **	---	---
Emission Rate:	0.515E-03 g/s	0.409E-02 lb/hr
Area Height:	3.00 meters	9.84 feet
Area Source Length:	64.87 meters	212.83 feet
Area Source Width:	32.44 meters	106.43 feet
Vertical Dimension:	3.00 meters	9.84 feet
Model Mode:	URBAN	
Population:	466776	
Dist to Ambient Air:	1.0 meters	3. feet

** BUILDING DATA **

No Building Downwash Parameters

** TERRAIN DATA **

No Terrain Elevations

Source Base Elevation: 0.0 meters 0.0 feet

Probe distance: 5000. meters 16404. feet

No flagpole receptors

No discrete receptors used

** FUMIGATION DATA **

No fumigation requested

** METEOROLOGY DATA **

Min/Max Temperature: 250.0 / 310.0 K -9.7 / 98.3 Deg F

Minimum Wind Speed: 0.5 m/s

```
 Anemometer Height:   10.000 meters

 Dominant Surface Profile: Urban
 Dominant Climate Type:    Average Moisture

 Surface friction velocity (u*): not adjusted

DEBUG OPTION ON




 AERSCREEN output file:
 2021.09.23_7thandLocust_Operation.out



 *** AERSCREEN Run is Ready to Begin




 No terrain used, AERMAP will not be run
**************************************************

SURFACE CHARACTERISTICS & MAKEMET
Obtaining surface characteristics...
```

Using AERMET seasonal surface characteristics for Urban with Average Moisture

Season	Albedo	Bo	zo
Winter	0.35	1.50	1.000
Spring	0.14	1.00	1.000
Summer	0.16	2.00	1.000
Autumn	0.18	2.00	1.000

Creating met files aerscreen_01_01.sfc & aerscreen_01_01.pfl

Creating met files aerscreen_02_01.sfc & aerscreen_02_01.pfl

Creating met files aerscreen_03_01.sfc & aerscreen_03_01.pfl

Creating met files aerscreen_04_01.sfc & aerscreen_04_01.pfl

Buildings and/or terrain present or rectangular area source, skipping probe

FLOWSECTOR started 09/23/21 11:43:17

****

Running AERMOD

Processing Winter

Processing surface roughness sector 1

```
**************************************************
Processing wind flow sector   1

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector   0

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

**************************************************
Processing wind flow sector   2

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector   5

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

**************************************************
Processing wind flow sector   3

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector  10

    ********   WARNING MESSAGES   ********
               ***  NONE  ***
```

```
**************************************************

Processing wind flow sector   4

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector  15

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

**************************************************

Processing wind flow sector   5

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector  20

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

**************************************************

Processing wind flow sector   6

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector  25

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

**************************************************
```

```
Processing wind flow sector   7

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Winter sector  30

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

 *****************************************

  Running AERMOD

 Processing Spring

Processing surface roughness sector  1

**************************************************

Processing wind flow sector   1

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector   0

    ********   WARNING MESSAGES   ********

               ***  NONE  ***

**************************************************

Processing wind flow sector   2

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector   5
```

```
    ********   WARNING MESSAGES    ********

               ***  NONE  ***


**************************************************

Processing wind flow sector   3


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector  10


    ********   WARNING MESSAGES    ********

               ***  NONE  ***


**************************************************

Processing wind flow sector   4


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector  15


    ********   WARNING MESSAGES    ********

               ***  NONE  ***


**************************************************

Processing wind flow sector   5


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector  20
```

```
    ********   WARNING MESSAGES   ********

               ***  NONE  ***


**************************************************

Processing wind flow sector   6


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector  25


    ********   WARNING MESSAGES   ********

               ***  NONE  ***


**************************************************

Processing wind flow sector   7


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Spring sector  30


    ********   WARNING MESSAGES   ********

               ***  NONE  ***

 ****************************************


  Running AERMOD

 Processing Summer


Processing surface roughness sector  1
```

```
**************************************************

Processing wind flow sector   1

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector   0

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

**************************************************

Processing wind flow sector   2

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector   5

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

**************************************************

Processing wind flow sector   3

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector  10

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

**************************************************
```

```
Processing wind flow sector   4

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector  15

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

**************************************************
Processing wind flow sector   5

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector  20

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

**************************************************
Processing wind flow sector   6

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector  25

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

**************************************************
Processing wind flow sector   7
```

```
 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Summer sector  30


    ********   WARNING MESSAGES   ********

               ***  NONE  ***

 ******************************************


  Running AERMOD

 Processing Autumn


Processing surface roughness sector  1


**************************************************

Processing wind flow sector   1


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector   0


    ********   WARNING MESSAGES   ********

               ***  NONE  ***


**************************************************

Processing wind flow sector   2


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector   5
```

```
    ********   WARNING MESSAGES   ********

               ***  NONE  ***


**************************************************

Processing wind flow sector   3


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector  10


    ********   WARNING MESSAGES   ********

               ***  NONE  ***


**************************************************

Processing wind flow sector   4


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector  15


    ********   WARNING MESSAGES   ********

               ***  NONE  ***


**************************************************

Processing wind flow sector   5


 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector  20


    ********   WARNING MESSAGES   ********
```

```
               ***  NONE  ***

**************************************************
Processing wind flow sector   6

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector  25

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

**************************************************
Processing wind flow sector   7

 AERMOD Finishes Successfully for FLOWSECTOR stage 2 Autumn sector  30

    ********   WARNING MESSAGES   ********
               ***  NONE  ***

FLOWSECTOR   ended 09/23/21 11:43:23

REFINE       started 09/23/21 11:43:23

 AERMOD Finishes Successfully for REFINE stage 3 Winter sector   0

    ********   WARNING MESSAGES   ********
```

*** NONE ***

REFINE ended 09/23/21 11:43:24

****

AERSCREEN Finished Successfully

With no errors or warnings

Check log file for details

****

Ending date and time 09/23/21 11:43:25

Concentration	Distance	Elevation	Diag	Season/Month	Zo sector	Date	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	HT	REF TA	HT
0.30364E+01	1.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0
0.38432E+01	25.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0
* 0.40245E+01	33.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0
0.23075E+01	50.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0
0.12455E+01	75.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0
0.81589E+00	100.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0
0.59193E+00	125.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0
0.45642E+00	150.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0
0.36733E+00	175.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0
0.30456E+00	200.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0
0.25835E+00	225.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0
0.22309E+00	250.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0
0.19536E+00	275.00	0.00	5.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0
0.17315E+00	300.00	0.00	5.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0
0.15500E+00	325.00	0.00	5.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0
0.13994E+00	350.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0
0.12727E+00	375.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0
0.11643E+00	400.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0
0.10708E+00	425.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0
0.98928E-01	450.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0
0.91799E-01	475.00	0.00	5.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0
0.85517E-01	500.00	0.00	0.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0
0.79947E-01	525.00	0.00	10.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0
0.74978E-01	550.00	0.00	10.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0
0.70521E-01	575.00	0.00	15.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0
0.66505E-01	600.00	0.00	10.0	Winter	0-360	10011001	-1.30	0.043	-9.000	0.020	-999.	21.	6.0	1.000	1.50	0.35	0.50	10.0	310.0	2.0

1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.63071E-01 625.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.59755E-01 650.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.56729E-01 675.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.53959E-01 700.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.51415E-01 725.00 0.00 5.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.49072E-01 750.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.46908E-01 775.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.44904E-01 800.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.43044E-01 825.00 0.00 5.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.41313E-01 850.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.39699E-01 875.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.38192E-01 900.00 0.00 15.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.36781E-01 925.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.35457E-01 950.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.34215E-01 975.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.33046E-01 1000.00 0.00 5.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.31944E-01 1025.00 0.00 15.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.30904E-01 1050.00 0.00 5.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.29922E-01 1075.00 0.00 15.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.28993E-01 1100.00 0.00 5.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.28112E-01 1125.00 0.00 20.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.27278E-01 1149.99 0.00 15.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.26485E-01 1175.00 0.00 15.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.25732E-01 1200.00 0.00 5.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.25014E-01 1225.00 0.00 20.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.24330E-01 1249.99 0.00 25.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.23678E-01 1275.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0

1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.23055E-01 1300.00 0.00 5.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.22461E-01 1325.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.21892E-01 1350.00 0.00 30.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.21348E-01 1375.00 0.00 30.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.20827E-01 1400.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.20327E-01 1425.00 0.00 15.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.19848E-01 1450.00 0.00 20.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.19388E-01 1475.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.18947E-01 1500.00 0.00 5.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.18522E-01 1525.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.18114E-01 1550.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.17721E-01 1574.99 0.00 25.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.17342E-01 1600.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.16978E-01 1625.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.16626E-01 1650.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.16287E-01 1675.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.15959E-01 1700.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.15643E-01 1725.00 0.00 10.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.15338E-01 1750.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.15042E-01 1775.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.14757E-01 1800.00 0.00 25.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.14481E-01 1824.99 0.00 15.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.14213E-01 1850.00 0.00 10.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.13954E-01 1875.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.13703E-01 1900.00 0.00 10.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.13460E-01 1925.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.13224E-01 1950.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0

1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.12995E-01 1975.00 0.00 5.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.12773E-01 2000.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.12558E-01 2025.00 0.00 5.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.12348E-01 2050.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.12145E-01 2075.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.11947E-01 2100.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.11755E-01 2125.00 0.00 5.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.11568E-01 2150.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.11387E-01 2175.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.11210E-01 2200.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.11038E-01 2225.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.10870E-01 2250.00 0.00 15.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.10707E-01 2275.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.10548E-01 2300.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.10393E-01 2325.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.10242E-01 2350.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.10094E-01 2375.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.99504E-02 2400.00 0.00 20.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.98102E-02 2425.00 0.00 5.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.96734E-02 2449.99 0.00 25.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.95399E-02 2475.00 0.00 5.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.94095E-02 2500.00 0.00 15.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.92821E-02 2525.00 0.00 20.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.91578E-02 2550.00 0.00 25.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.90362E-02 2575.00 0.00 25.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.89175E-02 2600.00 0.00 20.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.88014E-02 2625.00 0.00 20.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0

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1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.86879E-02    2650.00     0.00 15.0      Winter     0-360  10011001  -1.30 0.043 -9.000 0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.85770E-02    2675.00     0.00 25.0      Winter     0-360  10011001  -1.30 0.043 -9.000 0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.84684E-02    2700.00     0.00  0.0      Winter     0-360  10011001  -1.30 0.043 -9.000 0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.83622E-02    2725.00     0.00 20.0      Winter     0-360  10011001  -1.30 0.043 -9.000 0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.82583E-02    2750.00     0.00 10.0      Winter     0-360  10011001  -1.30 0.043 -9.000 0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.81566E-02    2775.00     0.00 15.0      Winter     0-360  10011001  -1.30 0.043 -9.000 0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.80571E-02    2800.00     0.00 15.0      Winter     0-360  10011001  -1.30 0.043 -9.000 0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.79596E-02    2825.00     0.00  5.0      Winter     0-360  10011001  -1.30 0.043 -9.000 0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.78642E-02    2850.00     0.00 20.0      Winter     0-360  10011001  -1.30 0.043 -9.000 0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.77708E-02    2875.00     0.00 25.0      Winter     0-360  10011001  -1.30 0.043 -9.000 0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.76792E-02    2900.00     0.00  5.0      Winter     0-360  10011001  -1.30 0.043 -9.000 0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.75895E-02    2925.00     0.00 10.0      Winter     0-360  10011001  -1.30 0.043 -9.000 0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.75016E-02    2950.00     0.00  5.0      Winter     0-360  10011001  -1.30 0.043 -9.000 0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.74155E-02    2975.00     0.00 10.0      Winter     0-360  10011001  -1.30 0.043 -9.000 0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.73310E-02    3000.00     0.00  5.0      Winter     0-360  10011001  -1.30 0.043 -9.000 0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.72482E-02    3025.00     0.00  0.0      Winter     0-360  10011001  -1.30 0.043 -9.000 0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.71670E-02    3050.00     0.00  5.0      Winter     0-360  10011001  -1.30 0.043 -9.000 0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.70874E-02    3074.99     0.00 20.0      Winter     0-360  10011001  -1.30 0.043 -9.000 0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.70092E-02    3100.00     0.00  5.0      Winter     0-360  10011001  -1.30 0.043 -9.000 0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.69326E-02    3125.00     0.00 10.0      Winter     0-360  10011001  -1.30 0.043 -9.000 0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.68574E-02    3150.00     0.00 10.0      Winter     0-360  10011001  -1.30 0.043 -9.000 0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.67836E-02    3174.99     0.00 10.0      Winter     0-360  10011001  -1.30 0.043 -9.000 0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.67112E-02    3200.00     0.00  5.0      Winter     0-360  10011001  -1.30 0.043 -9.000 0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.66401E-02    3225.00     0.00 10.0      Winter     0-360  10011001  -1.30 0.043 -9.000 0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.65703E-02    3250.00     0.00  5.0      Winter     0-360  10011001  -1.30 0.043 -9.000 0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.65017E-02    3275.00     0.00 20.0      Winter     0-360  10011001  -1.30 0.043 -9.000 0.020 -999.  21.     6.0
1.000  1.50  0.35   0.50  10.0  310.0   2.0
  0.64344E-02    3300.00     0.00  5.0      Winter     0-360  10011001  -1.30 0.043 -9.000 0.020 -999.  21.     6.0
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1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.63683E-02 3325.00 0.00 15.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.63033E-02 3350.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.62395E-02 3375.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.61768E-02 3400.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.61152E-02 3425.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.60546E-02 3450.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.59951E-02 3475.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.59366E-02 3500.00 0.00 20.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.58791E-02 3525.00 0.00 25.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.58225E-02 3550.00 0.00 25.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.57668E-02 3575.00 0.00 15.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.57121E-02 3600.00 0.00 15.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.56582E-02 3625.00 0.00 15.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.56053E-02 3650.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.55532E-02 3675.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.55019E-02 3700.00 0.00 20.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.54514E-02 3724.99 0.00 20.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.54018E-02 3750.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.53529E-02 3775.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.53047E-02 3800.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.52574E-02 3825.00 0.00 5.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.52107E-02 3849.99 0.00 15.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.51648E-02 3875.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.51195E-02 3900.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.50749E-02 3925.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.50311E-02 3950.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.49878E-02 3975.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0

1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.49452E-02 4000.00 0.00 10.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.49032E-02 4025.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.48619E-02 4050.00 0.00 30.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.48211E-02 4075.00 0.00 5.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.47809E-02 4100.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.47413E-02 4125.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.47023E-02 4150.00 0.00 10.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.46638E-02 4175.00 0.00 5.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.46259E-02 4200.00 0.00 10.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.45885E-02 4225.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.45516E-02 4250.00 0.00 10.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.45152E-02 4275.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.44793E-02 4300.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.44440E-02 4325.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.44091E-02 4350.00 0.00 10.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.43746E-02 4375.00 0.00 10.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.43407E-02 4400.00 0.00 10.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.43071E-02 4425.00 0.00 10.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.42741E-02 4449.99 0.00 10.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.42414E-02 4475.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.42092E-02 4500.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.41775E-02 4525.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.41461E-02 4550.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.41151E-02 4575.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.40845E-02 4600.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.40544E-02 4625.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.40246E-02 4650.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0

1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.39952E-02 4675.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.39661E-02 4700.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.39375E-02 4725.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.39092E-02 4750.00 0.00 5.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.38812E-02 4775.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.38535E-02 4800.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.38263E-02 4825.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.37993E-02 4850.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.37727E-02 4875.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.37464E-02 4900.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.37204E-02 4925.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.36947E-02 4950.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.36693E-02 4975.00 0.00 0.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0
0.36443E-02 5000.00 0.00 5.0 Winter 0-360 10011001 -1.30 0.043 -9.000 0.020 -999. 21. 6.0
1.000 1.50 0.35 0.50 10.0 310.0 2.0

SWAPE Technical Consultation, Data Analysis and Litigation Support for the Environment

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Geologic and Hydrogeologic Characterization, Investigation and Remediation Strategies

Expert Testimony

Industrial Stormwater Compliance

CEQA Review

Professional Certifications:

*Professional Geologist
**Certified Hydrogeologist

Education:

M.S. Degree, Geology, California State University Los Angeles, Los Angeles, CA, 1984.
B.A. Degree, Geology, Humboldt State University, Arcata, CA, 1982.

Professional Certifications:

California Professional Geologist
California Certified Hydrogeologist

Professional Experience:

30 years of experience in environmental policy, contaminant assessment and remediation, stormwater compliance, and CEQA review. Spent nine years with the U.S. EPA in the Resource Conservation Recovery Act (RCRA) and

Superfund programs and served as EPA's Senior Science Policy Advisor in the Western Regional Office where he identified emerging threats to groundwater. While with EPA, served as a Senior Hydrogeologist in the oversight of the assessment of seven major military facilities undergoing base closure. Led numerous enforcement actions under provisions of the Resource Conservation and Recovery Act (RCRA) and directed efforts to improve hydrogeologic characterization and water quality monitoring. For the past 15 years, as a founding partner with SWAPE, developed extensive client relationships and has managed complex projects that include consultations as an expert witness and a regulatory specialist, and managing projects ranging from industrial stormwater compliance to CEQA review of impacts from hazardous waste, air quality and greenhouse gas emissions.

Positions held include:

Government:

- Senior Science Policy Advisor and Hydrogeologist, U.S. Environmental Protection Agency (1989–1998);
- Hydrogeologist, National Park Service, Water Resources Division (1998 – 2000);
- Geologist, U.S. Forest Service (1986 – 1998)

Educational:

- Geology Instructor, Golden West College, 2010 – 2104, 2017;
- Adjunct Faculty Member, San Francisco State University, Department of Geosciences (1993 – 1998);
- Instructor, College of Marin, Department of Science (1990 – 1995);

Private Sector:

- Founding Partner, Soil/Water/Air Protection Enterprise (SWAPE) (2003 – present);
- Senior Environmental Analyst, Komex H2O Science, Inc. (2000 -- 2003);
- Executive Director, Orange Coast Watch (2001 – 2004);
- Geologist, Dames & Moore (1984 – 1986).

Senior Regulatory and Litigation Support Analyst:

With SWAPE, responsibilities have included:

- Lead analyst and testifying expert, for both plaintiffs and defendants, in the review of over 300 environmental impact reports and negative declarations since 2003 under CEQA that identify significant issues with regard to

hazardous waste, water resources, water quality, air quality, greenhouse gas emissions, and geologic hazards.

- Recommending additional mitigation measures to lead agencies at the local and county level to include additional characterization of health risks and implementation of protective measures to reduce exposure to hazards from toxins.
- Stormwater analysis, sampling and best management practice evaluation, for both government agencies and corporate clients, at more than 150 industrial facilities.
- Serving as expert witness for both plaintiffs and defendants in cases including contamination of groundwater, CERCLA compliance in assessment and remediation, and industrial stormwater contamination.
- Technical assistance and litigation support for vapor intrusion concerns, for both government agencies and corporate clients.
- Lead analyst and testifying expert in the review of environmental issues in license applications for large solar power plants before the California Energy Commission.
- Manager of a project to evaluate numerous formerly used military sites in the western U.S.
- Manager of a comprehensive evaluation of potential sources of perchlorate contamination in Southern California drinking water wells.
- Manager and designated expert for litigation support under provisions of Proposition 65 in the review of releases of gasoline to sources drinking water at major refineries and hundreds of gas stations throughout California.

With Komex H2O Science Inc., duties included the following:

- Senior author of a report on the extent of perchlorate contamination that was used in testimony by the former U.S. EPA Administrator and General Counsel.
- Senior researcher in the development of a comprehensive, electronically interactive chronology of MTBE use, research, and regulation.
- Senior researcher in the development of a comprehensive, electronically interactive chronology of perchlorate use, research, and regulation.
- Senior researcher in a study that estimates nationwide costs for MTBE remediation and drinking water treatment, results of which were published in newspapers nationwide and in testimony against provisions of an energy bill that would limit liability for oil companies.
- Research to support litigation to restore drinking water supplies that have been contaminated by MTBE in California and New York.
- Lead author for a multi-volume remedial investigation report for an

operating school in Los Angeles that met strict regulatory requirements and rigorous deadlines.
- Development of strategic approaches for cleanup of contaminated sites in consultation with clients and regulators.

Executive Director:

As Executive Director with Orange Coast Watch, an Orange County-based not-for-profit water-quality organization, led efforts to restore water quality at Orange County beaches from multiple sources of contamination including urban runoff and the discharge of wastewater. In reporting to a Board of Directors that included representatives from leading Orange County universities and businesses, prepared issue papers in the areas of treatment and disinfection of wastewater and control of the discharge of grease to sewer systems. Actively participated in the development of countywide water quality permits for the control of urban runoff and permits for the discharge of wastewater. Worked with other nonprofits to protect and restore water quality, including Surfrider, Natural Resources Defense Council and Orange County CoastKeeper as well as with business institutions including the Orange County Business Council.

Hydrogeology:

As a Senior Hydrogeologist with the U.S. Environmental Protection Agency, led investigations to characterize and cleanup closing military bases, including Mare Island Naval Shipyard, Hunters Point Naval Shipyard, Treasure Island Naval Station, Alameda Naval Station, Moffett Field, Mather Army Airfield, and Sacramento Army Depot. Specific activities included:

- Leading efforts to model groundwater flow and contaminant transport, ensured adequacy of monitoring networks, and assessed cleanup alternatives for contaminated sediment, soil, and groundwater.
- Initiating a regional program for evaluation of groundwater sampling practices and laboratory analysis at military bases.
- Identifying emerging issues, wrote technical guidance, and assisted in policy and regulation development through work on four national U.S. EPA workgroups, including the Superfund Groundwater Technical Forum and the Federal Facilities Forum.

At the request of the State of Hawaii, developed a methodology to determine the vulnerability of groundwater to contamination on the islands of Maui and Oahu. Used

analytical models and a GIS to show zones of vulnerability, and the results were adopted and published by the State of Hawaii and County of Maui.

As a hydrogeologist with the EPA Groundwater Protection Section, worked with provisions of the Safe Drinking Water Act and NEPA to prevent drinking water contamination. Specific activities included the following:

- Received an EPA Bronze Medal for contribution to the development of national guidance for the protection of drinking water.
- Managed the Sole Source Aquifer Program and protected the drinking water of two communities through designation under the Safe Drinking Water Act. Prepared geologic reports, conducted hearings, and responded to public comments from residents who were very concerned about the impact of designation.
- Reviewed a number of Environmental Impact Statements for planned major developments, including large hazardous and solid waste disposal facilities, mine reclamation, and water transfer.

Served as a hydrogeologist with the RCRA Hazardous Waste program. Duties included:

- Supervised the hydrogeologic investigation of hazardous waste sites to determine compliance with Subtitle C requirements.
  - Reviewed and wrote "part B" permits for the disposal of hazardous waste.
- Conducted RCRA Corrective Action investigations of waste sites and led inspections that formed the basis for significant enforcement actions that were developed in close coordination with U.S. EPA legal counsel.
- Wrote contract specifications and supervised contractor's investigations of waste sites.

With the National Park Service, directed service-wide investigations of contaminant sources to prevent degradation of water quality, including the following:

- Applied pertinent laws and regulations including CERCLA, RCRA, NEPA, NRDA, and the Clean Water Act to control military, mining, and landfill contaminants.
- Conducted watershed-scale investigations of contaminants at parks, including Yellowstone and Olympic National Park.
- Identified high-levels of perchlorate in soil adjacent to a national park in New Mexico and advised park superintendent on appropriate response actions under CERCLA.
- Served as a Park Service representative on the Interagency Perchlorate Steering Committee, a national workgroup.

- Developed a program to conduct environmental compliance audits of all National Parks while serving on a national workgroup.
- Co-authored two papers on the potential for water contamination from the operation of personal watercraft and snowmobiles, these papers serving as the basis for the development of nation- wide policy on the use of these vehicles in National Parks.
- Contributed to the Federal Multi-Agency Source Water Agreement under the Clean Water Action Plan.

Policy:

Served as senior management as the Senior Science Policy Advisor with the U.S. Environmental Protection Agency, Region 9. Activities included the following:

- Advising the Regional Administrator and senior management on emerging issues such as the potential for the gasoline additive MTBE and ammonium perchlorate to contaminate drinking water supplies.
- Shaping EPA's national response to these threats by serving on workgroups and by contributing to guidance, including the Office of Research and Development publication, Oxygenates in Water: Critical Information and Research Needs.
- Improving the technical training of EPA's scientific and engineering staff.
- Earning an EPA Bronze Medal for representing the region's 300 scientists and engineers in negotiations with the Administrator and senior management to better integrate scientific principles into the policy-making process.
- Establishing national protocol for the peer review of scientific documents.

Geology:

With the U.S. Forest Service, led investigations to determine hillslope stability of areas proposed for timber harvest in the central Oregon Coast Range. Specific activities included:

- Mapping geology in the field, and used aerial photographic interpretation and mathematical models to determine slope stability.
- Coordinating research with community stakeholders who were concerned with natural resource protection.
- Characterizing the geology of an aquifer that serves as the sole source of drinking water for the city of Medford, Oregon.

As a consultant with Dames and Moore, led geologic investigations of two contaminated sites (later listed on the Superfund NPL) in the Portland, Oregon, area and a large

hazardous waste site in eastern Oregon. Duties included the following:

- Supervising year-long effort for soil and groundwater sampling.
- Conducting aquifer tests.
    - Investigating active faults beneath sites proposed for hazardous waste disposal.

Teaching:

From 1990 to 1998, taught at least one course per semester at the community college and university levels:

- At San Francisco State University, held an adjunct faculty position and taught courses in environmental geology, oceanography (lab and lecture), hydrogeology, and groundwater contamination.
- Served as a committee member for graduate and undergraduate students.
- Taught courses in environmental geology and oceanography at the College of Marin.
- Part time geology instructor at Golden West College in Huntington Beach, California from 2010 to 2014 and in 2017.

Invited Testimony, Reports, Papers and Presentations:

Hagemann, M.F., 2008. Disclosure of Hazardous Waste Issues under CEQA. Presentation to the PublicEnvironmental Law Conference, Eugene, Oregon.

Hagemann, M.F., 2008. Disclosure of Hazardous Waste Issues under CEQA. Invited presentation to U.S.EPA Region 9, San Francisco, California.

Hagemann, M.F., 2005. Use of Electronic Databases in Environmental Regulation, Policy Making andPublic Participation. Brownfields 2005, Denver, Coloradao.

Hagemann, M.F., 2004. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in Nevada and the Southwestern U.S. Presentation to a meeting of the American Groundwater Trust, Las Vegas, NV (served on conference organizing committee).

Hagemann, M.F., 2004. Invited testimony to a California Senate committee hearing on air toxins atschools in Southern California, Los Angeles.

Brown, A., Farrow, J., Gray, A. and **Hagemann, M.**, 2004. An Estimate of Costs to Address MTBEReleases from Underground Storage Tanks and the Resulting Impact to Drinking Water Wells.
Presentation to the Ground Water and Environmental Law Conference, National

GroundwaterAssociation.

Hagemann, M.F., 2004. Perchlorate Contamination of the Colorado River and Impacts to Drinking Waterin Arizona and the Southwestern U.S. Presentation to a meeting of the American Groundwater Trust, Phoenix, AZ (served on conference organizing committee).

Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River and Impacts to Drinking Waterin the Southwestern U.S. Invited presentation to a special committee meeting of the National Academy of Sciences, Irvine, CA.

Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River. Invited presentation to atribal EPA meeting, Pechanga, CA.

Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River. Invited presentation to ameeting of tribal representatives, Parker, AZ.

Hagemann, M.F., 2003. Impact of Perchlorate on the Colorado River and Associated Drinking WaterSupplies. Invited presentation to the Inter-Tribal Meeting, Torres Martinez Tribe.

Hagemann, M.F., 2003. The Emergence of Perchlorate as a Widespread Drinking Water Contaminant.Invited presentation to the U.S. EPA Region 9.

Hagemann, M.F., 2003. A Deductive Approach to the Assessment of Perchlorate Contamination. Invitedpresentation to the California Assembly Natural Resources Committee.

Hagemann, M.F., 2003. Perchlorate: A Cold War Legacy in Drinking Water. Presentation to a meeting ofthe National Groundwater Association.

Hagemann, M.F., 2002. From Tank to Tap: A Chronology of MTBE in Groundwater. Presentation to ameeting of the National Groundwater Association.

Hagemann, M.F., 2002. A Chronology of MTBE in Groundwater and an Estimate of Costs to AddressImpacts to Groundwater. Presentation to the annual meeting of the Society of Environmental Journalists.

Hagemann, M.F., 2002. An Estimate of the Cost to Address MTBE Contamination in

Groundwater(and Who Will Pay). Presentation to a meeting of the National Groundwater Association.

Hagemann, M.F., 2002. An Estimate of Costs to Address MTBE Releases from Underground Storage Tanks and the Resulting Impact to Drinking Water Wells. Presentation to a meeting of the U.S. EPA andState Underground Storage Tank Program managers.

Hagemann, M.F., 2001. From Tank to Tap: A Chronology of MTBE in Groundwater. Unpublishedreport.

Hagemann, M.F., 2001. Estimated Cleanup Cost for MTBE in Groundwater Used as Drinking Water.Unpublished report.

Hagemann, M.F., 2001. Estimated Costs to Address MTBE Releases from Leaking Underground StorageTanks. Unpublished report.

Hagemann, M.F., and VanMouwerik, M., 1999. Potential Water Concerns Related to Snowmobile Usage. Water Resources Division, National Park Service, Technical Report.

VanMouwerik, M. and **Hagemann, M.F**. 1999, Water Quality Concerns Related to Personal WatercraftUsage. Water Resources Division, National Park Service, Technical Report.

Hagemann, M.F., 1999, Is Dilution the Solution to Pollution in National Parks? The George WrightSociety Biannual Meeting, Asheville, North Carolina.

Hagemann, M.F., 1997, The Potential for MTBE to Contaminate Groundwater. U.S. EPA SuperfundGroundwater Technical Forum Annual Meeting, Las Vegas, Nevada.

Hagemann, M.F., and Gill, M., 1996, Impediments to Intrinsic Remediation, Moffett Field Naval AirStation, Conference on Intrinsic Remediation of Chlorinated Hydrocarbons, Salt Lake City.

Hagemann, M.F., Fukunaga, G.L., 1996, The Vulnerability of Groundwater to Anthropogenic Contaminants on the Island of Maui, Hawaii. Hawaii Water Works Association Annual Meeting, Maui,October 1996.

Hagemann, M. F., Fukanaga, G. L., 1996, Ranking Groundwater Vulnerability in Central Oahu,
Hawaii. Proceedings, Geographic Information Systems in Environmental Resources Management, Airand Waste Management Association Publication VIP-61.

Hagemann, M.F., 1994. Groundwater Ch ar ac te r i z a t i o n and Cl ean up a t Closing Military Basesin California. Proceedings, California Groundwater Resources Association Meeting.

Hagemann, M.F. and Sabol, M.A., 1993. Role of the U.S. EPA in the High Plains States Groundwater Recharge Demonstration Program. Proceedings, Sixth Biennial Symposium on the Artificial Recharge of Groundwater.

Hagemann, M.F., 1993. U.S. EPA Policy on the Technical Impracticability of the Cleanup of DNAPL-contaminated Groundwater. California Groundwater Resources Association Meeting.

Hagemann, M.F., 1992. Dense Nonaqueous Phase Liquid Contamination of Groundwater: An Ounce ofPrevention... Proceedings, Association of Engineering Geologists Annual Meeting, v. 35.

Other Experience:

Selected as subject matter expert for the California Professional Geologist licensing examinations,2009-2011.

SWAPE Technical Consultation, Data Analysis and Litigation Support for the Environment

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Paul Rosenfeld, Ph.D.

Chemical Fate and Transport & Air Dispersion Modeling

Principal Environmental Chemist

Risk Assessment And Remediation Specialist

Education

Ph.D. Soil Chemistry, University of Washington, 1999. Dissertation on VOC filtration.

M.S. Environmental Science, U.C. Berkeley, 1995. Thesis on organic waste economics.

B.A. Environmental Studies, U.C. Santa Barbara, 1991. Thesis on wastewater treatment.

Professional Experience

Dr. Rosenfeld is the environmental chemist at Soil Water Air Protection Enterprise (SWAPE). His focus is the fate and transport of environmental contaminants, risk assessment, and ecological restoration. His project experience ranges from monitoring and modeling of pollution sources as they relate to human and ecological health. Dr. Rosenfeld has investigated and designed remediation programs and risk assessments for contaminated sites containing, petroleum, MtBE and fuel oxygenates, chlorinated solvents, pesticides, radioactive waste, PCBs, PAHs, dioxins, furans, volatile organics, semi-volatile organics, perchlorate, heavy metals, asbestos, PFOA, unusual polymers, and odor. Significant projects performed by Dr. Rosenfeld include the following:

Litigation Support

Client: Nexsen Pruet, LLC (Charleston, South Carolina)

Serving as expert in chlorine exposure in railroad tank car accident where approximately 120,000 pounds of chlorine were released.

Client: Buzbee Law Firm (Houston, Texas)

Serving as expert in catalyst release and refinery emissions cases against BP Texas City. One case settled regarding worker exposure, but ongoing litigation remains involving ~21,500 plaintiffs who have health claims and are seeking remediation from chemicals released from BP facility.

Client: Girardi Keese (Los Angeles, California)

Serving as expert investigating hydrocarbon exposure and property damage for ~600 individuals and ~280 properties in Carson, California, where homes were constructed above a large tank farm formerly owned by Shell.

Client: Brent Coon Law Firm (Cleveland, Ohio)

Served as expert calculating an environmental exposure to benzene, PAHs, and VOCs from a Chevron Refinery in Hooven Ohio. Ran AERMOD to calculate cumulative dose.

Client: Girardi Keese (Los Angeles, California)

Served as expert testifying on hydrocarbon exposure to a woman who worked on a fuel barge operated by Chevron. Demonstrated that the plaintiff was exposed to excessive amounts of benzene.

Client: Lundy Davis (Lake Charles, Louisiana)

Served as consulting expert on an oil field case representing the lease holder of a contaminated oil field. Conducted field work evaluating oil field contamination in Sulfur, Louisiana. Property is owned by Conoco Phillips, but leased by Yellow Rock, a small oil firm.

Client: Cox Cox Filo (Lake Charles, Louisiana)

Serving as testifying expert on multimillion gallon oil spill in Lake Charles which occurred on June 19, 2006, resulting in hydrocarbon vapor exposure to hundreds of workers and residents. Prepared air model and calculated dose. Demonstrated that petroleum odor alone can result in significant health harms.

Client: Cotchett Pitre & McCarthy (San Francisco, California)

Served as testifying expert representing homeowners who unknowingly purchased homes built on an old oil field in Santa Maria, California. Properties have high concentrations of petroleum hydrocarbons in subsurface soils resulting in diminished property value.

Client: Baron & Budd (Dallas, Texas) & Weitz & Luxenberg (New York, NY)

Serving as consulting expert in MTBE Federal Multi District Litigation (MDL) in New York. Consolidated ground water data, created maps for test cases, constructed damage model, evaluated taste and odor threshold levels.

Client: Law Offices Of Anthony Liberatore P.C. (Los Angeles, California)

Served as testifying expert representing individuals who rented homes on the Inglewood Oil Field in California. Plaintiffs were exposed to hydrocarbon contaminated water and air, and experienced health harms associated with the petroleum exposure.

Client: Baron & Budd P.C. Dallas Texas and Korein Tillery (Madison, County)

Illinois, Private Wells Analysis: Coordinated data acquisition and GIS analysis evaluating private well proximity to leaking underground storage tanks to support litigation noting that private well owners should be compensated for MTBE testing.

Client: Orange County District Attorney (Orange County, California)

Coordinated a review of 143 ARCO gas stations in Orange County to assist the District Attorney's prosecution of CCR Title 23 and California Health and Safety Code violators.

Client: Environmental Litigation Group (Birmingham, Alabama)

Serving as testifying expert in a health effects case against ABC Coke/Drummond Co for polluting a community with PAHs, benzene, particulate matter, heavy metals, and coke oven emissions. Created air dispersions models and conducted attic dust sampling, exposure modeling, and risk assessment for plaintiffs.

Client: Masry Vitatoe (Westlake Village, CA), Engstrom Lipscomb Lack (Los Angeles, CA) & Baron & Budd (Dallas Texas).

Served as consulting expert in Proposition 65 lawsuit filed against the major oil companies for benzene and toluene releases from gas stations and refineries which contaminated groundwater. Settlement included over $110 million dollars in injunctive relief.

Client: Tommy Franks Law Firm (Austin, Texas)

Served as expert evaluating groundwater contamination which resulted from the hazardous waste injection program and negligent actions of Morton Thiokol and Rohm Hass. Interpreted drinking water contamination and community exposure.

Client: Baron & Budd (Dallas Texas) and Sher Leff (San Francisco, California)

Serving as consulting expert for several California cities which have filed defective product cases against Dow Chemical and Shell for 1,2,3-trichloropropane groundwater contamination. Generated maps showing capture zones of impacted wells for various municipalities.

Client: Baron & Budd (Dallas Texas) and Korein Tillery (Madison County, Illinois)

Serving as consulting expert for a Class Action defective product Atrazine claim filed in Madison County, Illinois against Syngenta and five other manufactures. The plaintiff class representative is Holiday Shores Water System which is evaluating health issues associated with atrazine, costing out treatment for filtration of public drinking water supplies.

Client: Weitz & Luxenberg (New York, NY)

Serving as expert on Property Damage and Nuisance claims resulting from emissions from the Countywide Landfill in Ohio. The landfill had an exothermic reaction or fire resulting from aluminum dross dumping, and the EPA fined the landfill $10,000,000 dollars.

Client: Baron & Budd (Dallas Texas)

Serving as consulting expert for a groundwater contamination case in Pensacola Florida where fluorinated compounds contaminated wells operated by Escambia County.

Client: Environmental Litigation Group (Birmingham, Alabama)

Serving as an expert on property damage, medical monitoring and toxic tort claims that have been filed on behalf of over 12,000 plaintiffs who were exposed to PCBs and dioxins/furans resulting from emissions from Monsanto and Cerro Copper's operations in East Sauget, Illinois.

Client: Environmental Litigation Group (Birmingham, Alabama)

Served as an expert on groundwater case when Exxon Mobil and Helena Chemical released ethylene dichloride into groundwater resulting in a large plume. Prepared report on the appropriate treatment technology and cost, and flaws with the proposed on site remedy.

Client: Environmental Litigation Group (Birmingham, Alabama)

Serving as an expert on air emissions released when a Bartlo Packaging Incorporated facility in West Helena Arkansas exploded resulting in community exposure to pesticides and smoke from combustion of pesticides.

Client: Omara & Padilla (San Diego, Califorinia)

Served as testifying expert on nuisance case against Nutro Dogfood Company that constructed a large dog food processing facility in the middle of a residential community in Victorville California with no odor control devices. The facility has undergone significant modifications including installation of a regenerative thermal oxidizer.

Client: Environmental Litigation Group (Birmingham, Alabama)

Serving as an expert on property damage and medical monitoring claims that have been filed against International Paper resulting from chemical emissions from facilities located in Bastrop Louisiana, Prattville, Alabama, and Georgetown South Carolina.

Client: Estep and Shafer (West Virginia)

Served as expert running various air models to calculate acid emissions dose to residents resulting from emissions from a coal fired power plant in West Virginia.

Client: Watts Law Firm (Austin, Texas), Woodfill Pressler (Houston, Texas), Woska & Ass. (Oklahoma)

Served as testifying expert on community and worker exposure to CCA, creosote, PAHs, and dioxins/furans from a BNSF and Kopper's Facility in Somerville, Texas. Conducted field sampling, risk assessment, dose assessment and air modelling to quantify exposure to workers and community members.

Client: Environmental Litigation Group (Birmingham, Alabama)

Served as expert regarding community exposure to CCA, creosote, PAHs, and dioxins/furans from a Louisiana Pacific wood treatment facility in Florala, Alabama. Conducted blood sampling and environmental sampling to determine environmental exposure to dioxins/furans and PAHs.

Client: Sanders Law (Colorado Springs, Co) and Vamvoras & Schwartzberg (Lake Charles, Louisiana)

Serving as expert calculating chemical exposure to over 500 workers from large ethylene dichloride spill in Lake Charles, Louisiana, at the Conoco Phillips Refinery.

Client: Baron & Budd P.C. (Dallas, Texas)

Served as consulting expert in a defective product lawsuit against Dow Agroscience focusing on Clopyralid, a recalcitrant herbicide that damaged numerous compost facilities across the United States.

Client: Sullivan Papain Block McGrath & Cannavo (NY, NY) and The Cochran Firm (Dothan, MS)

Served as expert regarding community exposure to metals, PAHs PCBs, and dioxins/furans from the burning of Ford Paint Sludge and municipal solid waste in Ringwood, New Jersey.

Client: Rose, Klein Marias (Los Angeles, CA)

Serving as expert in Proposition 65 cases, each one citing an individual facility in the Port of Oakland. Prepared air dispersion and risk models to demonstrate that each facility emits diesel particulate matter that results in risks exceeding 1/100,000, hence violating the Proposition 65 Statute.

Client: Rose, Klein Marias (Los Angeles, CA)

Serving as expert in 55 Proposition 65 cases, each one citing an individual facility in the Port of Los Angeles and Port of Long Beach as the defendant. Prepared air dispersion and risk models to demonstrate that each facility emits diesel particulate matter that results in risks exceeding 1/100,000, hence violating the Proposition 65 Statute.

Client: Graham & Associates (Calabasas, CA)

Served as expert in a case in which General Motors is the plaintiff and BP Arco is the defendant. Conducted air models to demonstrate that sulfur emissions from the BP Arco facility formed sulfuric acid, destroying paint on over 350 automobiles.

Client: Rose, Klien Marias (Los Angeles, CA) and Environmental Law Foundation (San Francisco, CA)

Served as expert in a Proposition 65 case against potato chip manufacturers. Conducted an analysis of several brands of potato chips for acrylamide concentration and found that all samples exceeded Proposition 65 No Significant Risk Levels.

Client: Gonzales & Robinson (Westlake Village, CA)

Served as testifying expert in a toxic tort case against Chevron (Ortho) for allowing a community to be contaminated with lead arsenate pesticide. Created air dispersion models, soil vadose zone transport models, and evaluated bioaccumulation of lead arsenate in food.

Client: Environment Now (Santa Monica, CA)

Served as expert for Environment Now to convince the State of California to file a nuisance claim against the automobile manufactures to recover MediCal damages from expenditures on asthma-related health care costs.

Client: Trutanich Michell (Long Beach, California)

Served as expert representing San Pedro Boat Works in the Port of Los Angeles. Prepared air dispersion, particulate air dispersion, and storm water discharge models to demonstrate that Kaiser Bulk Loading is responsible for copper concentrate accumulating in the bay sediment.

Client: Azurix of North America (Fort Myers, Florida)

Provided expert opinions, reports and research pertaining to a proposed County Ordinance requiring biosolids applicators to measure VOC and odor concentrations at application sites' boundaries.

Client: MCP Polyurethane (Pittsburg, Kansas)

Provided expert opinions and reports regarding metal-laden landfill runoff that damaged a running track by causing the reversion of the polyurethane due to its catalytic properties.

Risk Assessment And Modeling

Client: ABT-Haskell (San Bernardino, California)

Prepared air dispersion model for a proposed state-of-the-art enclosed compost facility. Developed odor detection limits to predict 1, 8, and 24-hour off-site concentrations of sulfur, ammonia, and amine as well as prepared a traffic analysis.

Client: Jefferson PRP Group (Los Angeles, California)

Evaluated exposure pathways for chlorinated solvents and hexavalent chromium for human health risk assessment of Los Angeles Academy (formerly Jefferson New Middle School) operated by Los Angeles Unified School District.

Client: Covanta (Susanville California)

Prepared human health risk assessment for Covanta Energy focusing on agricultural worker exposure to caustic fertilizer.

Client: CIWMB (Sacramento California)

Used dispersion models to estimate traveling distance and VOC concentrations downwind from a composting facility for the California Integrated Waste Management Board.

Client: Carboquimeca (Bogotá, Columbia)

Evaluated exposure pathways for human health risk assessment for a confidential client focusing on significant concentrations of arsenic and chlorinated solvents contaminating groundwater used for drinking water.

Client: Navy Base Realignment and Closure Team (Treasure Island, California)

Used Johnson-Ettinger model to estimate indoor air PCB concentrations and compared estimated values with empirical data collected in homes. Negotiated action levels with DTSC.

Client: San Diego State University (San Diego California)

Measured CO_2 flux from soils amended with different quantities of biosolids compost at Camp Pendleton to determine CO_2 credit values for coastal sage under fertilized and non-fertilized conditions.

Client: Navy Base Realignment and Closure Team (MCAS Tustin, California)

Evaluated cumulative risk of a multiple pathway scenario with a child resident and a construction worker's exposure to air and soil via particulate and vapor inhalation, incidental soil ingestion, and dermal contact with soil.

Client: MCAS Miramar (San Diego, California)

Evaluated exposure pathways of metals in soil, comparing site data to background data. Risk assessment incorporated multiple pathway scenarios assuming child resident and construction worker exposure to particulate and vapor inhalation, soil ingestion, and dermal soil contact.

Client: Naval Weapons Station (Seal Beach, California)

Used a multiple pathway model to generate dust emission factors from automobiles driving on dirt roads. Calculated bioaccumulation of metals, PCBs, dioxin congeners and pesticides to estimate human and ecological risk.

Client: King County, Douglas County (Washington State)

Measured PM_{10} and $PM_{2.5}$ emissions from windblown soil treated with biosolids and a polyacrylamide polymer in Douglas County Washington. Used Pilat Mark V impactor for measurement and compared data to EPA particulate regulations.

Client: King County, Seattle, Washington.

Conducted emission inventory for several compost and wastewater facilities comparing VOC, particulate, and fungi concentrations to NIOSH values estimating risk to workers and individuals at neighboring facilities.

Air Pollution Investigation and Remediation

Client: Republic Landfill (Santa Clarita, CA)

Managed a field investigation of odor around a landfill during 30+ events. Using hedonic tone, butanol scale, dilution-to-threshold values, and odor character to evaluate odor sources and character and intensity.

Client: California Biomass (Victorville, CA)

Managed a field investigation of odor around landfill during 9+ events. Using hedonic tone, butanol scale, dilution-to-threshold values, and odor character to evaluate odor sources, character and intensity.

Client: ABT-Haskell (Redlands, California)

Assisted in permitting a compost facility that will be completely enclosed with a complex scrubbing system using acid scrubbers, base scrubbers, biofilters, heat exchangers and chlorine to reduce VOC emissions by 99 percent.

Client: Synagro (Corona, California)

Designed and monitored 30-foot by 20-foot by 6-foot biofilter for VOC control from an industrial composting facility in Corona, California, reducing VOC emissions by 99 percent.

Client: Jeff Gage, (Tacoma, Washington)

Conducted emission inventory at industrial compost facility using GC/MS analyses for VOCs. Evaluated effectiveness of VOC and odor control systems and estimated human health risk.

Client: Daishowa America (Port Angeles Mill, Washington)

Analyzed industrial paper sludge and ash for VOCs, heavy metals and nutrients to develop a land application program. Metals were compared to federal guidelines to determine maximum allowable land application rates.

Client: Jeff Gage (Puyallup Washington)

Measured effectiveness of biofilters at composting facility and ran EPA dispersion models to estimate traveling distance of odor and human health risk from exposure to volatile organics.

Surface Water, Groundwater, and Wastewater Investigation/Remediation

Client: Confidential (Downey, California)

Managed groundwater investigation to determine horizontal extent of 1,000 foot TCE plume associated with a metal finishing shop.

Client: Confidential (West Hollywood, California)

Designed soil vapor extraction system that is currently being installed for confidential client. Managed groundwater investigation to determine horizontal extent of TCE plume associated with dry cleaning.

Client: Synagro Technologies (Sacramento, California)

Managed groundwater investigation to determine if biosolids application impacted salinity and nutrient concentrations in groundwater.

Client: Navy Base Realignment and Closure Team (Treasure Island, California)

Assisted in the design and remediation of PCB, chlorinated solvent, hydrocarbon and lead contaminated groundwater and soil on Treasure Island. Negotiated screening levels with DTSC and Water Board. Assisted in the preparation of FSP/QAPP, RI/FS, and RAP documents and assisted in CEQA document preparation.

Client: Navy Base Realignment and Closure Team (MCAS Tustin, California)

Assisted in the design of groundwater monitoring systems for chlorinated solvents at Tustin MCAS. Contributed to the preparation of FS for groundwater treatment.

Client: MCP (Walnut, California)

Conducted forensic surface water and sediment sampling. Designed and conducted bench scale laboratory experiments. Demonstrated that metal and organic contaminants in storm water and sediment from landfill flooded and chemically compromised a polyurethane track.

Client: Mission Cleaning Facility (Salinas California)

Prepared a RAP and cost estimate for using an oxygen releasing compound (ORC) and molasses to oxidize diesel fuel in soil and groundwater at Mission Cleaning in Salinas.

Client: King County, Washingon

Established and monitored experimental plots at a US EPA Superfund Site in wetland and upland mine tailings contaminated with zinc and lead in Smelterville, Idaho. Used organic matter and pH adjustment for wetland remediation and erosion control.

Client: City of Redmond (Richmond, Washington)

Collected storm water from compost-amended and fertilized turf to measure nutrients in urban runoff. Evaluated effectiveness of organic matter-lined detention ponds on reduction of peak flow during storm events. Drafted compost amended landscape installation guidelines to promote storm water detention and nutrient runoff reduction.

Client: City of Seattle (Seattle, Washington)

Measured VOC emissions from Renton wastewater treatment plant in Washington. Ran GC/MS, dispersion models, and sensory panels to characterize, quantify, control and estimate risk from VOCs.

Client: Plumas County (Quincy, California)

Installed wetland to treat contaminated water containing 1% copper in an EPA Superfund site. Revegetated 10 acres of acidic and metal laden sand dunes resulting from hydraulic mining. Installed and monitored piezometers in wetland estimating metal loading.

Client: Adams Egg Farm (St. Kitts, West Indies)

Designed, constructed, and maintained 3 anaerobic digesters at Springfield Egg Farm, St. Kitts. Digesters treated chicken excrement before effluent discharged into sea. Chicken waste was converted into methane cooking gas.

Client: BLM (Kremmling Colorado)

Collected water samples for monitoring program along upper stretch of the Colorado River. Rafted along river, protecting water quality by digging and repairing latrines.

Soil Science and Restoration Projects

Client: Kinder Morgan (San Diego County California)

Designed and monitored the restoration of a 110-acre project on Camp Pendleton along a 26-mile pipeline. Managed crew of 20, planting coastal sage, riparian, wetland, native grassland, and marsh ecosystems. Negotiated with the CDFW concerning species planting list and success standards.

Client: NAVY BRAC (Orote Landfill, Guam)

Designed and monitored pilot landfill cap mimicking limestone forest. Measured different species' root-penetration into landfill cap. Plants were used to evapotranspirate water, reducing water leaching through soil profile.

Client: LA Sanitation District Puente Hills Landfill (Whittier, California)

Monitored success of upland and wetland mitigation at Puente Hills Landfill operated by Sanitation Districts of Los Angeles. Negotiated with the Army Corps of Engineers and CDFG to obtain an early sign-off.

Client: City of Escondido (Escondido California)

Designed, managed, installed, and monitored a 20-acre coastal sage scrub restoration project at Kit Carson Park, Escondido, California.

Client: Home Depot (Encinitas, California)

Designed, managed, installed and monitored a 15-acre coastal sage scrub and wetland restoration project at Home Depot in Encinitas, California.

Client: Alvarado Water Filtration Plant (San Diego, California)

Planned, installed and monitored 2-acre riparian and coastal sage scrub mitigation in San Diego California.

Client: Monsanto and James River Corporation (Clatskanie Oregon)

Served as a soil scientist on a 50,000-acre hybrid poplar farm. Worked on genetically engineering study of Poplar trees to see if glyphosate resistant poplar clones were economically viable.

Client: World Wildlife Fund (St. Kitts, West Indies)

Managed 2-year biodiversity study, quantifying and qualifying the various flora and fauna in St. Kitts' expanding volcanic rainforest. Collaborated with skilled botanists, ornithologists and herpetologists.

Publications

Rosenfeld, P.E. & Feng, L. (2011). *The Risks of Hazardous Waste*, Amsterdam: Elsevier Publishing.

Cheremisinoff, N.P., & **Rosenfeld, P.E.** (2011). *Handbook of Pollution Prevention and Cleaner Production: Best Practices in the Agrochemical Industry*, Amsterdam: Elsevier Publishing.

Gonzalez, J., Feng, L., Sutherland, A., Waller, C., Sok, H., Hesse, R., **Rosenfeld, P.** (2011). PCBs and Dioxins/Furans in Attic Dust Collected Near Former PCB Production and Secondary Copper Facilities in Sauget, IL. *Procedia Environmental Sciences* 4(2011):113-125.

Feng, L., Wu, C., Tam, L., Sutherland, A.J., Clark, J.J., **Rosenfeld, P.E.**, (2010). Dioxin and Furan Blood Lipid and Attic Dust Concentrations in Populations Living Near Four Wood Treatment Facilities in the United States. *Journal of Environmental Health* 73(6):34-46.

Cheremisinoff, N.P., & **Rosenfeld, P.E.** (2010). *Handbook of Pollution Prevention and Cleaner Production: Best Practices in the Wood and Paper Industries*, Amsterdam: Elsevier Publishing.

Cheremisinoff, N.P., & **Rosenfeld, P.E.** (2009). *Handbook of Pollution Prevention and Cleaner Production: Best Practices in the Petroleum Industry*, Amsterdam: Elsevier Publishing.

Wu, C., Tam, L., Clark, J., **Rosenfeld, P**. (2009). 'Dioxin and furan blood lipid concentrations in populations living near four wood treatment facilities in the United States', in Brebbia, C.A. and Popov, V., eds., *Air Pollution XVII:*

Proceedings of the Seventeenth International Conference on Modelling, Monitoring and Management of Air Pollution, Tallinn, Estonia. 20-22 July, 2009, Southampton, Boston. WIT Press.

Tam L. K.., Wu C. D., Clark J. J. and **Rosenfeld, P.E.** (2008) A Statistical Analysis Of Attic Dust And Blood Lipid Concentrations Of Tetrachloro-p-Dibenzodioxin (TCDD) Toxicity Equivalency Quotients (TEQ) In Two Populations Near Wood Treatment Facilities. Organohalogen Compounds, Volume 70 (2008) page 002254.

Tam L. K.., Wu C. D., Clark J. J. and **Rosenfeld, P.E.** (2008) Methods For Collect Samples For Assessing Dioxins And Other Environmental Contaminants In Attic Dust: A Review. Organohalogen Compounds, Volume 70 (2008) page 000527.

Hensley, A.R. A. Scott, J. J. J. Clark, **P. E. Rosenfeld** (2007) "Attic Dust and Human Blood Samples Collected near a Former Wood Treatment Facility" Environmental Research. 105, pp 194-197.

Rosenfeld, P.E., J. J. J. Clark, A. R. Hensley, M. Suffet. (2007) "The Use of an Odor Wheel Classification for Evaluation of Human Health Risk Criteria for Compost Facilities" –Water Science & Technology 55(5): 345-357.

Rosenfeld, P. E., M. Suffet. (2007) **"**The Anatomy Of Odour Wheels For Odours Of Drinking Water, Wastewater, Compost And The Urban Environment **"** Water Science & Technology 55(5): 335-344.

Sullivan, P. J. Clark, J.J.J., Agardy, F. J., **Rosenfeld, P.E.,** (2007) "Toxic Legacy, Synthetic Toxins in the Food, Water, and Air in American Cities," Elsevier Publishing, Boston Massachusetts.

Rosenfeld P.E., and Suffet, I.H. (Mel) (2007) "Anatomy Of An Odor Wheel" Water Science and Technology, In Press.

Rosenfeld, P.E., Clark, J.J.J., Hensley A.R., Suffet, I.H. (Mel) (2007) "The use of an odor wheel classification for evaluation of human health risk criteria for compost facilities." Water Science And Technology, In Press.

Hensley A.R., Scott, A., **Rosenfeld P.E.,** Clark, J.J.J. (2006) "Dioxin Containing Attic Dust And Human Blood Samples Collected Near A Former Wood Treatment Facility." The 26th International Symposium on Halogenated Persistent Organic Pollutants – DIOXIN2006, August 21 – 25, 2006. Radisson SAS Scandinavia Hotel in Oslo Norway.

Rosenfeld, P.E., and Suffet I.H. (2004) "Control of Compost Odor Using High Carbon Wood Ash", Water Science and Technology, Vol. 49, No. 9. pp. 171-178.

Rosenfeld, P.E., Clark J. J. and Suffet, I.H. (2004) "Value of and Urban Odor Wheel." (2004). WEFTEC 2004. New Orleans, October 2 - 6, 2004.

Rosenfeld, P.E., and Suffet, I.H. (2004) "Understanding Odorants Associated With Compost, Biomass Facilities, and the Land Application of Biosolids" Water Science and Technology. Vol. 49, No. 9. pp 193-199.

Rosenfeld, P.E., and Suffet I.H. (2004) "Control of Compost Odor Using High Carbon Wood Ash", Water Science and Technology, Vol. 49, No. 9. pp. 171-178.

Rosenfeld, P. E., Grey, M. A., Sellew, P. (2004) Measurement of Biosolids Odor and Odorant Emissions from Windrows, Static Pile and Biofilter. Water Environment Research. 76 (4): 310-315 JUL-AUG 2004.

Rosenfeld, P. E., Grey, M., (2003) Two stage biofilter for biosolids composting odor control. Seventh International In Situ And On Site Bioremediation Symposium. Batelle Conference Orlando Florida. June 2 and June 6, 2003.

Rosenfeld, P.E., Grey, M and Suffet, M. 2002. "Controlling Odors Using High Carbon Wood Ash." Biocycle, March 2002, Page 42.

Rosenfeld, P.E., Grey, M and Suffet, M. (2002). "Compost Demonstration Project, Sacramento, California Using High-Carbon Wood Ash to Control Odor at a Green Materials Composting Facility Integrated Waste Management Board Public Affairs Office, Publications Clearinghouse (MS–6), Sacramento, CA Publication #442-02-008. April 2002.

Rosenfeld, P.E., and C.L. Henry. 2001. Characterization of odor emissions from three different biosolids. Water Soil and Air pollution. Vol. 127 Nos. 1-4, pp. 173-191

Rosenfeld, P.E., and Henry C. L., 2000. Wood ash control of odor emissions from biosolids application. Journal of Environmental Quality. 29:1662-1668.

Rosenfeld, P.E., C.L. Henry and D. Bennett. 2001. Wastewater dewatering polymer affect on biosolids odor emissions and microbial activity. Water Environment Research. 73: 363-367.

Rosenfeld, P.E., and C.L. Henry. 2001. Activated Carbon and Wood Ash Sorption of Wastewater, Compost, and Biosolids Odorants Water Environment Research, 73: 388-392.

Rosenfeld, P.E., and Henry C. L., 2001. High carbon wood ash effect on biosolids microbial activity and odor. Water Environment Research. Volume 131 No. 1-4, pp. 247-262

Rosenfeld, P.E, C.L. Henry, R. Harrison. 1998. Oat and Grass Seed Germination and Nitrogen and Sulfur Emissions Following Biosolids Incorporation With High-Carbon Wood-Ash. Water Environment Federation 12th Annual Residuals and Biosolids Management Conference Proceedings. Bellevue Washington.

Chollack, T. and **P. Rosenfeld.** 1998. Compost Amendment Handbook For Landscaping. Prepared for and distributed by the City of Redmond, Washington State.

P. Rosenfeld. 1992. The Mount Liamuiga Crater Trail. Heritage Magazine of St. Kitts, Vol. 3 No. 2.

P. Rosenfeld. 1993. High School Biogas Project to Prevent Deforestation On St. Kitts. Biomass Users Network, Vol. 7, No. 1, 1993.

P. Rosenfeld. 1992. British West Indies, St. Kitts. Surf Report, April issue.

P. Rosenfeld. 1998. Characterization, Quantification, and Control of Odor Emissions From Biosolids Application To Forest Soil. Doctoral Thesis. University of Washington College of Forest Resources.

P. Rosenfeld. 1994. Potential Utilization of Small Diameter Trees On Sierra County Public Land. Masters thesis reprinted by the Sierra County Economic Council. Sierra County, California.

P. Rosenfeld. 1991. How to Build a Small Rural Anaerobic Digester & Uses Of Biogas In The First And Third World. Bachelors Thesis. University of California.

England Environmental Agency, 2002. Landfill Gas Control Technologies. Publishing Organization Environment Agency, Rio House, Waterside Drive, Aztec West, Almondsbury BRISTOL, BS32 4UD

Presentations

Sok, H.L.; Waller, C.C.; Feng, L.; Gonzalez, J.; Sutherland, A.J.; Wisdom-Stack, T.; Sahai, R.K.; Hesse, R.C.; **Rosenfeld, P.E.** "Atrazine: A Persistent Pesticide in Urban Drinking Water." Urban Environmental Pollution, Boston, MA, June 20-23, 2010.

Feng, L.; Gonzalez, J.; Sok, H.L.; Sutherland, A.J.; Waller, C.C.; Wisdom-Stack, T.; Sahai, R.K.; La, M.; Hesse, R.C.; **Rosenfeld, P.E.** "Bringing Environmental Justice to East St. Louis, Illinois." Urban Environmental Pollution, Boston, MA, June 20-23, 2010.

Rosenfeld, P.E. (2009) "Perfluoroctanoic Acid (PFOA) and Perfluoroactane Sulfonate (PFOS) Contamination in Drinking Water From the Use of Aqueous Film Forming Foams (AFFF) at Airports in the United States" Presentation at the 2009 Ground Water Summit and 2009 Ground Water Protection Council Spring Meeting, April 19-23, 2009. Tuscon, AZ.

Rosenfeld, P.E. (2009) "Cost to Filter Atrazine Contamination from Drinking Water in the United States" Contamination in Drinking Water From the Use of Aqueous Film Forming Foams (AFFF) at Airports in the United States" Presentation at the 2009 Ground Water Summit and 2009 Ground Water Protection Council Spring Meeting, April 19-23, 2009. Tuscon, AZ.

Rosenfeld, P. E. (2007) "Moss Point Community Exposure To Contaminants From A Releasing Facility" Platform Presentation at the 23rd Annual International Conferences on Soils Sediment and Water, October 15-18, 2007. University of Massachusetts, Amherst MA.

Rosenfeld, P. E. (2007) "The Repeated Trespass of Tritium-Contaminated Water Into A Surrounding Community Form Repeated Waste Spills From A Nuclear Power Plant" Platform Presentation at the 23rd Annual International Conferences on Soils Sediment and Water, October 15-18, 2007. University of Massachusetts, Amherst MA.

Rosenfeld, P. E. (2007) "Somerville Community Exposure To Contaminants From Wood Treatment Facility Emissions" Poster Presentation at the 23rd Annual International Conferences on Soils Sediment and Water, October 15-18, 2007. University of Massachusetts, Amherst MA.

Rosenfeld P. E. "Production, Chemical Properties, Toxicology, & Treatment Case Studies of 1,2,3-Trichloropropane (TCP)" – Platform Presentation at the Association for Environmental Health and Sciences (AEHS) Annual Meeting, San Diego, CA, 3/2007

Rosenfeld P. E. "Blood and Attic Sampling for Dioxin/Furan, PAH, and Metal Exposure in Florala, Alabama" – Platform Presentation at the AEHS Annual Meeting, San Diego, CA, 3/2007

Hensley A.R., Scott, A., **Rosenfeld P.E.,** Clark, J.J.J. (2006) "Dioxin Containing Attic Dust And Human Blood Samples Collected Near A Former Wood Treatment Facility." APHA 134 Annual Meeting & Exposition, Boston Massachusetts. November 4 to 8th, 2006.

Paul Rosenfeld Ph.D. "Fate, Transport and Persistence of PFOA and Related Chemicals." Mealey's C8/PFOA Science, Risk & Litigation Conference" October 24, 25. The Rittenhouse Hotel, Philadelphia.

Paul Rosenfeld Ph.D. "Brominated Flame Retardants in Groundwater: Pathways to Human Ingestion, Toxicology and Remediation PEMA Emerging Contaminant Conference. September 19. Hilton Hotel, Irvine California.

Paul Rosenfeld Ph.D. "Fate, Transport, Toxicity, And Persistence of 1,2,3-TCP." PEMA Emerging Contaminant Conference. September 19. Hilton Hotel in Irvine, California.

Paul Rosenfeld Ph.D. "Fate, Transport and Persistence of PDBEs." Mealey's Groundwater Conference. September 26, 27. Ritz Carlton Hotel, Marina Del Ray, California.

Paul Rosenfeld Ph.D. "Fate, Transport and Persistence of PFOA and Related Chemicals." International Society of Environmental Forensics: Focus On Emerging Contaminants. June 7,8. Sheraton Oceanfront Hotel, Virginia Beach, Virginia.

Paul Rosenfeld Ph.D. "Rate Transport, Persistence and Toxicology of PFOA and Related Perfluorochemicals". 2005 National Groundwater Association Ground Water And Environmental Law Conference. July 21-22, 2005. Wyndham Baltimore Inner Harbor, Baltimore Maryland.

Paul Rosenfeld Ph.D. "Brominated Flame Retardants in Groundwater: Pathways to Human Ingestion, Toxicology and Remediation." 2005 National Groundwater Association Ground Water And Environmental Law Conference. July 21-22, 2005. Wyndham Baltimore Inner Harbor, Baltimore Maryland.

Paul Rosenfeld, Ph.D. and James Clark Ph.D. and Rob Hesse R.G. Tert-butyl Alcohol Liability and Toxicology, A National Problem and Unquantified Liability. National Groundwater Association. Environmental Law Conference. May 5-6, 2004. Congress Plaza Hotel, Chicago Illinois.

Paul Rosenfeld, Ph.D., 2004. Perchlorate Toxicology. Presentation to a meeting of the American Groundwater Trust. March 7th, 2004. Pheonix Arizona.

Hagemann, M.F., **Paul Rosenfeld, Ph.D.** and Rob Hesse, 2004. Perchlorate Contamination of the Colorado River. Invited presentation to a meeting of tribal representatives, Parker, AZ.

Paul Rosenfeld, Ph.D. A National Damage Assessment Model For PCE and Dry Cleaners. Drycleaner Symposium. California Ground Water Association. Radison Hotel, Sacramento, California. April 7, 2004.

Paul Rosenfeld, Ph.D. and James Clark Ph.D. Understanding Historical Use, Chemical Properties, Toxicity and Regulatory Guidance of 1,4 Dioxane. National Groundwater Association. Southwest Focus Conference. Water Supply and Emerging Contaminants. February 20-21, 2003. Hyatt Regency Phoenix Arizona.

Paul Rosenfeld, Ph.D. Underground Storage Tank Litigation and Remediation. California CUPA Forum. Marriott Hotel. Anaheim California. February 6-7, 2003.

Paul Rosenfeld, Ph.D. Underground Storage Tank Litigation and Remediation. EPA Underground Storage Tank Roundtable. Sacramento California. October 23, 2002

Rosenfeld, P.E. and Suffet, M. 2002. Understanding Odor from Compost, Wastewater and Industrial Processes. Sixth Annual Symposium On Off Flavors in the Aquatic Environment. International Water Association. Barcelona Spain. October 7- 10.

Rosenfeld, P.E. and Suffet, M. 2002. Using High Carbon Wood Ash to Control Compost Odor. Sixth Annual Symposium On Off Flavors in the Aquatic Environment. International Water Association. Barcelona Spain. October 7- 10.

Rosenfeld, P.E. and Grey, M. A. 2002. Biocycle Composting For Coastal Sage Restoration. Northwest Biosolids Management Association. Vancouver Washington. September 22-24.

Rosenfeld, P.E. and Grey, M. A. 2002. Soil Science Society Annual Conference. Indianapolis, Maryland. November 11-14.

Rosenfeld. P.E. 2000. Two stage biofilter for biosolids composting odor control. Water Environment Federation. Anaheim California. September 16, 2000.

Rosenfeld. P. E. 2000. Wood ash and biofilter control of compost odor. Biofest. October 16, 2000.Ocean Shores, California

Rosenfeld, P. E. 2000. Bioremediation Using Organic Soil Amendments. California Resource Recovery Association. Sacramento California.

Rosenfeld, P.E., C.L. Henry, R. Harrison. 1998. Oat and Grass Seed Germination and Nitrogen and Sulfur Emissions Following Biosolids Incorporation With High-Carbon Wood-Ash. Water Environment Federation 12th Annual Residuals and Biosolids Management Conference Proceedings. Bellevue Washington.

Rosenfeld, P.E., and C.L. Henry. 1999. An evaluation of ash incorporation with biosolids for odor reduction. Soil Science Society of America. Salt Lake City Utah.

Rosenfeld, P.E., C.L. Henry, R. Harrison. 1998. Comparison of Microbial Activity and Odor Emissions from Three Different Biosolids Applied to Forest Soil. Brown and Caldwell, Seattle Washington.

Rosenfeld, P.E., C.L. Henry. 1998. Characterization, Quantification, and Control of Odor Emissions from Biosolids Application To Forest Soil. Biofest Lake Chelan, Washington.

Rosenfeld, P.E., C.L. Henry, R. B. Harrison, and R. Dills. 1997. Comparison of Odor Emissions From Three Different Biosolids Applied to Forest Soil. Soil Science Society of America, Anaheim California.

Professional History

Soil Water Air Protection Enterprise (SWAPE); 2003 to present; Founding And Managing Partner
UCLA School of Public Health; 2007 to present; Lecturer (Asst Res)
UCLA School of Public Health; 2003 to 2006; Adjunct Professor
UCLA Environmental Science and Engineering Program; 2002-2004; Doctoral Intern Coordinator
UCLA Institute of the Environment, 2001-2002; Research Associate
Komex H_2O Science, 2001 to 2003; Senior Remediation Scientist
National Groundwater Association, 2002-2004; Lecturer
San Diego State University, 1999-2001; Adjunct Professor
Anteon Corp., San Diego, 2000-2001; Remediation Project Manager
Ogden (now Amec), San Diego, 2000-2000; Remediation Project Manager
Bechtel, San Diego, California, 1999 – 2000; Risk Assessor
King County, Seattle, 1996 – 1999; Scientist
James River Corp., Washington, 1995-96; Scientist
Big Creek Lumber, Davenport, California, 1995; Scientist
Plumas Corp., California and USFS, Tahoe 1993-1995; Scientist
Peace Corps and World Wildlife Fund, St. Kitts, West Indies, 1991-1993; Scientist
Bureau of Land Management, Kremmling Colorado 1990; Scientist

Teaching Experience

UCLA Department of Environmental Health (Summer 2003 through 2010) Teach Environmental Health Science 100 to students, including undergrad, medical doctors, public health professionals and nurses. Course focuses on the health effects of environmental contaminants.

National Ground Water Association, Successful Remediation Technologies. Custom Course In Sante Fe, New Mexico. May 21, 2002. Focused on fate and transport of fuel contaminants associated with underground storage tanks.

National Ground Water Association; Successful Remediation Technologies Course in Chicago Illinois. April 1, 2002. Focused on fate and transport of contaminants associated with Superfund and RCRA sites.

California Integrated Waste Management Board, April and May, 2001. Alternative Landfill Caps Seminar in San Diego, Ventura, and San Francisco. Focused on both prescriptive and innovative landfill cover design.

UCLA Department of Environmental Engineering, February 5 2002 Seminar on Successful Remediation Technologies focusing on Groundwater Remediation.

University Of Washington, Soil Science Program, Teaching Assistant for several courses including: Soil Chemistry, Organic Soil Amendments, and Soil Stability.

U.C. Berkeley, Environmental Science Program Teaching Assistant for Environmental Science 10.

Academic Grants Awarded

California Integrated Waste Management Board. $41,000 grant awarded to UCLA Institute of the Environment. Goal: To investigate effect of high carbon wood ash on volatile organic emissions from compost. 2001.

Synagro Technologies, Corona California: $10,000 grant awarded to San Diego State University. Goal: investigate effect of biosolids for restoration and remediation of degraded coastal sage soils. 2000.

King County, Department of Research and Technology, Washington State. $100,000 grant awarded to University of Washington: Goal: To investigate odor emissions from biosolids application and the effect of polymers and ash on VOC emissions. 1998.

Northwest Biosolids Management Association, Washington State. $20,000 grant awarded to investigate effect of polymers and ash on VOC emissions from biosolids. 1997.

James River Corporation, Oregon: $10,000 grant was awarded to investigate the success of genetically engineered Poplar trees with resistance to round-up. 1996.

United State Forest Service, Tahoe National Forest: $15,000 grant was awarded to investigating fire ecology of the Tahoe National Forest. 1995.

Kellogg Foundation, Washington D.C. $500 grant was awarded to construct a large anaerobic digester on St. Kitts in West Indies. 1993.

Cases that Dr. Rosenfeld Provided Deposition or Trial Testimony

In the Court of Common Pleas for the Second Judicial Circuit, State of South Carolina, County of Aiken
David Anderson, et al., *Plaintiffs*, vs. Norfolk Southern Corporation, et al., *Defendants*.
Case Number: 2007-CP-02-1584

In the Circuit Court of Jefferson County Alabama
Jaeanette Moss Anthony, et al., *Plaintiffs*, vs. Drummond Company Inc., et al., *Defendants*
Civil action No. CV 2008-2076

In the Ninth Judicial District Court, Parish of Rapides, State of Louisiana
Roger Price, et al., *Plaintiffs*, vs. Roy O. Martin, L.P., et al., *Defendants*.
Civil Suit Number 224,041 Division G

In the United States District Court, Western District Lafayette Division
Ackle et al., *Plaintiffs*, vs. Citgo Petroleum Corporation, et al., *Defendants*.
Case Number 2:07CV1052

In the United States District Court for the Southern District of Ohio
Carolyn Baker, et al., *Plaintiffs*, vs. Chevron Oil Company, et al., *Defendants*.
Case Number 1:05 CV 227

In the Fourth Judicial District Court, Parish of Calcasieu, State of Louisiana
Craig Steven Arabie, et al., *Plaintiffs*, vs. Citgo Petroleum Corporation, et al., *Defendants*.
Case Number 07-2738 G

In the Fourteenth Judicial District Court, Parish of Calcasieu, State of Louisiana
Leon B. Brydels, *Plaintiffs*, vs. Conoco, Inc., et al., *Defendants*.
Case Number 2004-6941 Division A

In the District Court of Tarrant County, Texas, 153rd Judicial District
Linda Faust, *Plaintiff*, vs. Burlington Northern Santa Fe Rail Way Company, Witco Chemical Corporation A/K/A Witco Corporation, Solvents and Chemicals, Inc. and Koppers Industries, Inc., *Defendants*.
Case Number 153-212928-05

In the Superior Court of the State of California in and for the County of San Bernardino
Leroy Allen, et al., *Plaintiffs*, vs. Nutro Products, Inc., a California Corporation and DOES 1 to 100, inclusive, *Defendants*.
John Loney, Plaintiff, vs. James H. Didion, Sr.; Nutro Products, Inc.; DOES 1 through 20, inclusive, *Defendants*.
Case Number VCVVS044671

In the United States District Court for the Middle District of Alabama, Northern Division
James K. Benefield, et al., *Plaintiffs*, vs. International Paper Company, *Defendant*.
Civil Action Number 2:09-cv-232-WHA-TFM

In the Superior Court of the State of California in and for the County of Los Angeles
Leslie Hensley and Rick Hensley, *Plaintiffs*, vs. Peter T. Hoss, as trustee on behalf of the Cone Fee Trust; Plains Exploration & Production Company, a Delaware corporation; Rayne Water Conditioning, Inc., a

California corporation; and DOES 1 through 100, *Defendants.*
Case Number SC094173

In the Superior Court of the State of California in and for the County of Santa Barbara, Santa Maria Branch
Clifford and Shirley Adelhelm, et al., all individually, *Plaintiffs*, vs. Unocal Corporation, a Delaware Corporation; Union Oil Company of California, a California corporation; Chevron Corporation, a California corporation; ConocoPhillips, a Texas corporation; Kerr-McGee Corporation, an Oklahoma corporation; and DOES 1 though 100, *Defendants.*
Case Number 1229251 (Consolidated with case number 1231299)

In the United States District Court for Eastern District of Arkansas, Eastern District of Arkansas
Harry Stephens Farms, Inc, and Harry Stephens, individual and as managing partner of Stephens Partnership, *Plaintiffs*, vs. Helena Chemical Company, and Exxon Mobil Corp., successor to Mobil Chemical Co., *Defendants*.
Case Number 2:06-CV-00166 JMM (Consolidated with case number 4:07CV00278 JMM)

In the United States District Court for the Western District of Arkansas, Texarkana Division
Rhonda Brasel, et al., *Plaintiffs*, vs. Weyerhaeuser Company and DOES 1 through 100, *Defendants.*
Civil Action Number 07-4037

In The Superior Court of the State of California County of Santa Cruz
Constance Acevedo, et al. *Plaintiffs* Vs. California Spray Company, et al. *Defendants*
Case No CV 146344

In the District Court of Texas 21st Judicial District of Burleson County
Dennis Davis, *Plaintiff*, vs. Burlington Northern Santa Fe Rail Way Company, *Defendant.*
Case Number 25,151

From: Austin Metoyer [mailto:austinm@dlba.org]
Sent: Tuesday, January 18, 2022 3:57 PM
To: CityClerk <CityClerk@longbeach.gov>
Cc: Ray Morquecho <Ray.Morquecho@longbeach.gov>; Connor Lock <Connor.Lock@longbeach.gov>; Diana Tang <Diana.Tang@longbeach.gov>; Tom Modica <Tom.Modica@longbeach.gov>; Mayor <Mayor@longbeach.gov>; Cindy Allen <Cindy.Allen@longbeach.gov>; Mary Zendejas <Mary.Zendejas@longbeach.gov>; Morris Mills <MorrisM@dlba.org>; Alexis Oropeza <Alexis.Oropeza@longbeach.gov>; Christopher Koontz <Christopher.Koontz@longbeach.gov>; Oscar Orci <Oscar.Orci@longbeach.gov>; Loara Cadavona <loaracadavona@gmail.com>
Subject: DLBA's Letter Regarding Agenda Item #21: Land Use Equivalency Program

-EXTERNAL-

Please find attached DLBA's letter regarding tonight's City Council agenda item:

- Agenda Item 21: PD-30 Development & Land Use Equivalency Program

Please file this letter into the public record for tonight's City Council meeting under agenda item 21.

Thank you,

DOWNTOWN LONG BEACH ALLIANCE

AUSTIN METOYER
Pronouns: He/Him/His
ECONOMIC DEVELOPMENT & POLICY MANAGER
100 W. Broadway, Ste. 120
Long Beach, CA 90802

Austinm@dlba.org
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DowntownLongBeach.org | #DTLB

DOWNTOWN LONG BEACH ALLIANCE

January 18, 2022

Long Beach City Council
Civic Center Plaza
411 West Ocean Blvd.
Long Beach, CA 90802

RE: Agenda Item #21: PD-30 Development & Land Use Equivalency Program

Dear Mayor Garcia and Honorable City Council Members,

Please accept this correspondence on behalf of the Downtown Long Beach Alliance (DLBA) Board of Directors and enter into the public record for the City Council meeting scheduled for Tuesday, January 18, 2022, support for the City of Long Beach's use of the Downtown Plan Program EIR Land Use Equivalency Program (Equivalency Program) as demonstrated in the 636 Locust development project.

DLBA has continuously supported implementation of the Downtown Plan (PD-30), including its stipulations for housing units, office space, and commercial retail. Both development and demand for Downtown housing has increased since the inception of PD-30, already outpacing the maximum planned construction of 5,000 new units. Concurrently, the creation of anticipated new office and retail space has not occurred, leaving the opportunity for greater residential density in PD-30 through City's Equivalency Program. DLBA supports such efforts to modify City development policy in order to accommodate new housing units at all price levels in Downtown.

The COVID-19 pandemic continues to create market uncertainty in housing, retail, and in-person work and DLBA commends the City for its policy flexibility, recognizing that previous land use stipulations may no longer fit the market realities of Long Beach or its residents. In projects such as the proposed development at 636 Locust, the immediate need for housing supersedes previous long-term goals for other projects. The Equivalency Program is able to ensure the best and highest use for such cases while preserving still-applicable PD-30 land-use regulations.

DLBA is keen to provide future policy feedback as it relates to the PD-30, and we look forward to our continued partnership with the City of Long Beach and its Development Services Department.

Thank you for your consideration.

Sincerely,

Broc Coward, COO

CC:

DLBA Board of Directors
Tom Modica, City Manager, City of Long Beach
Oscar Orsi, Director of Development Services, City of Long Beach

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Long Beach, CA 90802
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