

6) Response to Follow-up to Questions from the County of Alameda, Public Health

From: [Drake, Carmen, Public Health, OOD](#) on behalf of [Davis M.D., Muntu, Public Health, OOD](#)
To: [Cole, Doug](#)
Subject: Coal Project Responses
Date: Tuesday, October 06, 2015 2:37:12 PM
Attachments: [Coal Project Responses to Questions 10-6-15.docx](#)

Dear Mr. Cole:

Please accept the attached responses to questions regarding the public health and safety impacts of the transportation, transloading, handling and export of coal products in/through the City of Oakland.

Please direct questions to Anna Lee, anna.lee@acgov.org.

Best,
Muntu Davis

MUNTU DAVIS, MD, MPH
ALAMEDA COUNTY HEALTH OFFICER

***Sow a thought and you reap an act;
Sow an act and you reap a habit;
Sow a habit and you reap a character;
Sow a character and you reap a destiny.***

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Coal

Responses to City Administrator's Follow-up Questions and review of HDR Engineering Report

Dr. Muntu Davis, Alameda County Health Officer

10-6-15

1. How should "Project" and "Adjacent Neighbors" be defined pursuant to Development Agreement (DA) Section 3.4.2 ("existing or future occupants or users of the **Project Adjacent Neighbors**, or any portion thereof, or all of them, in a condition substantially dangerous to their health or safety")?

- Project – All private development subject to the Development Agreement which include the West, East and Central Gateway Development Area Leases, or just the West Gateway Development Area Lease portion which includes the location of the Break Bulk Terminal and rail right-of-way?

The "Project" should be defined as public and private development subject to the Development Agreement, West, East and Central and North Gateway Development Areas and Leases and rail right-of way. This ensures that the health and environmental protections put in place by City of Oakland Council will cover all future activities at the former Oakland Army Base.

- Adjacent Neighbors – The Army Base Redevelopment Plan Area, West Oakland Specific Plan Area, all of West Oakland, some other geographic area?

"Adjacent Neighbors" should be defined as all existing and future residents of Oakland that will be impacted, particularly West Oakland and East Oakland, and existing and future workers at the Oakland Bulk and Oversized Terminal (OBOT), the larger Development Area, and the Port of Oakland. In the case of the impacts of handling coal and an explosion, many Oakland residents will be impacted, particularly West Oakland residents. Residents of the flatlands of East Oakland are anticipated to be impacted by the transport of coal dust. Additionally, workers at the Terminal, the larger Development Area, and the Port of Oakland are another population that will be impacted and continuously exposed to working conditions dangerous to their health and safety.

2. Based upon #1 above, what are the health and/or safety impacts of coal being transported from rail to ship at the Break Bulk Terminal on the existing or future occupants or users of the **Project, Adjacent Neighbors**, or any portion thereof, or all of them?

The cumulative health impact of adding an additional source of pollution where the population already experiences a disproportionate burden of disease is the biggest concern. East and West

Oakland have long been designated by the Bay Area Air Quality Management District's Community Air Risk Evaluation (CARE) Program as being an where air pollution contributes most to poor health outcomes relative to other communities in the Bay Area. They are also listed as some of the top communities identified by California Environmental Protection Agency's (CalEPA) Cal EnviroScreen tool, which uses a comprehensive screening methodology to identify California communities that are disproportionately burdened by multiple sources of pollution. Any additional sources of air pollution will have a significantly greater impact in an area already disproportionately burdened by multiple sources of air pollution and with high rates of emergency room visits and hospitalization for asthma and cancer risk from existing pollution.

After reviewing information presented on both sides related to air quality impacts of coal transport via rail, it is reasonable to conclude that there will be increased emissions, particularly for those living and working nearby, from both fugitive coal dust and rail traffic, resulting in increased health concerns. Of extreme concern is PM 2.5 emitted from coal dust and diesel exhaust. Higher concentrations of diesel exhaust, a complex mixture of particles and gases, in addition to the 15% of coal dust lost along the rail lines (the remaining percentage of an unestimated amount of coal dust lost after implementation of the HDR Engineering's proposed coal dust mitigation methods), will negatively impact communities in East and West Oakland, Ashland-Cherryland, San Leandro and Hayward that already impacted by air pollution.

In West Oakland, the overall rate of asthma emergency department visits is almost two times the Alameda County rate.ⁱ East and West Oakland children are hospitalized for asthma twice as much as children under five in the County.ⁱⁱ In East Oakland, the overall rate of asthma hospitalizations is over two times the Alameda County rate.ⁱⁱⁱ Having asthma means missing school and work for doctor's appointments and to go to the Emergency Room. Missed days means falling behind in school and families falling behind economically, which has long-term health impacts. The health burdens add up to a shorter life expectancy; an African American child in East Oakland can expect to live about 14 years less than a White child in the Oakland Hills. And for West Oakland, the difference in life expectancy is 12 years.^{iv} The impacts from coal transport would backpedal on important recent public health gains from improved air quality and reduced asthma rates, particularly in West Oakland.

The Analysis of the Air Quality Impacts of the Proposed Morrow Pacific Project (Tran, Khanh T., 2012) examines a similar scenario to the proposed project of offloading from trains to an enclosed building via conveyors and found increases in NO₂ and PM 2.5 that exceeded NAAQS Standards even without including background concentrations, and even for PM 2.5 when modeling an all enclosed scenario.^v Dr. Bart Ostro examined a study of coal trains near Seattle, Washington and found significant increases in PM 2.5 from train emissions and coal dust in neighborhoods along rail lines (Jaffe, D., et.al., 2014).^{vi} HDR Engineering's Report of the Surface Transportation Board's study on rail transport in Montana concluded that PM 10 and 2.5 would not exceed NAAQS.^{vii} However, as noted by Dr. Ostro, this analysis does not take into account background concentrations, which are

currently high for West Oakland and the I-880 corridor and were found by the Bay Area Air Quality Management District to exceed the 24-hour PM 2.5 NAAQS standard more than 3 times year.^{viii}

The health and safety impacts of the transport and handling of coal include emissions of fugitive coal dust and diesel particulates from train engines. In both cases, PM 2.5 poses a health risk to nearby residents and workers. PM 2.5 is smaller than the diameter of a human hair and because of its size can be inhaled deep into the lungs and can enter the bloodstream.

Inhalation of coal dust would put vulnerable populations at greatest health risk. These populations include children less than 5 years of age, pregnant women, elderly and people with asthma and other respiratory disease, and people with cardiovascular disease. Inhalation of coal dust is linked to increased risk of lung disease and cancer.

The U.S. Department of Labor has long recognized the health effects of coal dust on workers, which affects the respiratory system, and coal workers have been shown to experience increased risk of chronic bronchitis, decreased pulmonary function, emphysema, and a condition called black lung from the inhalation of coal dust.^{ix}

Workers at the terminal will be potentially impacted by coal dust and/or coal mist when the coal is transferred from trains to the Terminal and working with the stockpiles in the Terminal to load them onto ships.

Workers will have to constantly water the stockpiles to reduce the risk of combustion and fires.^x It is not clear whether or not the byproduct of spraying or misting coal will create a distinct health and/or safety concern for workers in the Terminal and the environment around the Port.

Another concern of the health impacts from transport of coal includes increased risks of derailments and fires. Derailments are a reality and can increase due to transporting coal. One example of the risk to residents and the challenge to our emergency response system is the crude oil train derailment in Lac Megantic, Quebec resulted in 47 deaths, dozens of destroyed buildings, \$1 billion in property damage and thousands of residents displaced in July, 2013.^{xi} Both BNSF and Union Pacific connect Utah to Oakland. The rail lines pass through densely populated neighborhoods throughout Alameda County and the flatlands of East and West Oakland to the Terminal.

West Oakland already has a significantly increased cancer risk from diesel emissions. Diesel exhaust is a complex mixture of fine particles and gases. A significant portion of diesel exhaust consists of particles 2.5 microns or less in diameter (PM 2.5). Diesel exhaust is a listed toxic air contaminant by the California Air Resources Board and the California Office of Environmental Health Hazard Assessment and listed as a hazardous air pollutant to the United States Environmental Protection Agency.^{xii} Several of the substances in diesel exhaust are listed by the International Agency for Research on Cancer as a carcinogen, or as a probable or a possible human carcinogen.

11. Has there been a detailed review/analysis performed of the CCIG/OCOT commissioned September 15, 2015 HDR Engineering Air Quality & Human Health & Safety Assessment Report? Does that report adequately analyze the potential health and/or safety impacts as framed in Items #1 and 2 above? If not, why?

The CCIG/OBOT commissioned HDR Engineering Report does not adequately analyze the potential health and/or safety impacts as framed in Items #1 and 2. It does take into account the cumulative health impact of adding an additional source of pollution where the population already experiences a disproportionate burden of disease as a result of pollution and where multiple sources of pollution already exist.

The HDR Engineering report does not estimate the amount of coal dust (“fugitive coal dust”) that would be lost during rail transport; the report only states that, “The coal dust mitigation methods of load profiling/packing and using topping agents have been effective in greatly reducing emissions of coal dust, by at least 85%.” The remaining 15% of coal dust emissions not mitigated by these methods is expected to negatively impact health and the environment along the rail lines and surrounding areas. Particles of 2.5 microns or less in diameter (PM 2.5) from coal dust are important since it can be inhaled deep in the lungs.

Uncovered coal cars could be as long as 125-cars long and lose an average of 500 pounds of coal per car in transit, totaling 60,000 pounds lost per trains on an average trip.^{xiii} Estimations of fugitive coal dust by Dr. Bart Ostro would be significant, resulting in 400 tons of coal dust deposition along the rails and surrounding areas in Oakland annually, even with the recommended mitigations methods that would result in 85% control, as stated by HDR Engineering.

The HDR Engineering report recommends employing rail cars that unload, “via bottom drop (rather than tipping/dumping), and coal dust emissions from the unloading operations should be controlled by water sprays and/or foggers as coal drops into a hopper that connects to the conveying system.” Their report does not discuss the limitations of and coal dusts lost from the bottom drop mechanism during the segment of transport from the beginning and unloading points.

The Analysis of the Air Quality Impacts of the Proposed Morrow Pacific Project (Tran, Khanh T., 2012) examines similar a scenario to the proposed project of offloading from trains to enclosed building via conveyors and found increases in NO₂ and PM 2.5 that exceeded NAAQS Standards even without including background concentrations, even for PM 2.5 when modeling an all enclosed scenario.^{xiv} Dr. Bart Ostro examined a study of coal trains near Seattle, Washington and found significant increases in PM 2.5 from train emissions and coal dust in neighborhoods along rail lines (Jaffe, D., et.al., 2014).^{xv} HDR Engineering’s Report of the Surface Transportation Board’s study on rail transport in Montana concluded that PM 10 and 2.5 would not exceed NAAQS.^{xvi} However, as noted by Dr. Ostro, this analysis does not take into account background concentrations, which are currently high for West Oakland and the I-880 corridor and were found by the Bay Area Air Quality Management District to exceed the 24-hour PM 2.5 NAAQS standard more than 3 times year.^{xvii}

The HDR Engineering report also does not discuss the impact of emissions from the recommended filtered ventilation system on the outside air and the anticipated quantity and source of water needed for this spray system and its impact on the local water system and State in terms of the current and ongoing drought.

Lastly, as mentioned in Item #1, it is not clear whether or not the byproduct of spraying or misting coal will create a distinct health and/or safety concern for workers in the OBOT and the environment around the Port.

12. What specific Standard Conditions of Approval and/ or Mitigation Measures contained in the SCAMMRP would address the potential health and/ or safety impacts of coal as framed in Items #1 and 2 above?

The proposed innovation requires unloading of uncovered rail cars, conveying coal to an enclosed storage building, conveying coal to the dock and loading it onto the ships for export. I am unaware of where these types of facilities are already operating in the U.S. with tested and evaluated best practices.

In my review of the existing SCA/MMRPs, standards and mitigations would have to go above and beyond the existing SCA/MMRPs. Mitigation 4.4-3b would include criteria air pollutants from rail-related operations at the West Gateway Rail and Maritime Operations SCA-AIR-3 would take into account diesel particulate matter, but neither includes the transport or handling of coal or other fossil fuel commodities.^{xviii} Additionally, as the project would indirectly increase greenhouse gas emissions, this has implications for the Greenhouse Gas Reduction Plan (SCA GCC-1). This project would also have implications for the Hazards and Hazardous Materials and Stormwater Pollution Prevention (SCA HYD -1 through 4) Standards/ Mitigations.

The following are suggestions for inclusion. To note, these would require additional monitoring for compliance and adaptive management should the mitigations not adequately protect nearby residents, which adds more administrative burden to the City of Oakland.

- A. Fugitive dust will be emitted from the unloading of trains into the “enclosed” Terminals. Spraying at the openings at both ends of rail cars before they are dropped to conveying systems will require large volumes of water and a wastewater collection system to filter coal particles/mud and any toxic byproducts before it enters the sewer system or within an onsite wastewater treatment facility. It may require additional stormwater measures to prevent water mixed with coal from entering the Bay waters. Additional compliance and monitoring would need to be included, which can become an administrative burden for the City.
- B. The “enclosed” Terminals will require spraying, which presents the need for best practices mentioned above, and a closed ventilation system with PM 2.5 filtration, MERV 13 rating. These filters need to be changed frequently (every couple months). The plan for proper storage, disposal of the dirty filters and replacement would need to be specified and in compliance with any local, state or federal requirements. Additional compliance and monitoring would need to be included, which can become an administrative burden for the City.

- C. To reduce exposure of workers in the Terminal, they would need to constantly spray water and wear protective equipment, including respirators that can filter PM 2.5 100% of the time when working in the Terminal and handling the coal. Most respirators lose their effectiveness after becoming wet, which is more likely if water spraying or misting will be used in OBOT. Additional compliance and monitoring would need to be included with these measures.
- D. Cleaning of equipment, such as conveyor belts, from the unloading, loading and preparation for shipping will require large volumes of water as well as on-site wastewater treatment to filter out coal particles/mud and any toxic byproducts before it's combined with the sewer system or recirculated onsite. Additional compliance and monitoring of the equipment and systems would need to be included, which can become an administrative burden for the City.
- E. A hazardous materials plan would need to be developed with the Oakland Fire Department around reducing the risk of combustion from stock piles. Additional compliance and monitoring of the equipment and systems would need to be included.

16. With respect to emergency response planning and actual operations

- a. What is the public safety/ combustion risk of coal?

Coal dust can be 2.5 microns or less in diameter (PM 2.5) are carries significant health risks as mentioned above. Coal is highly combustible and produces toxic smoke when burned. It would require venting and watering measures to reduce the risks to workers and neighborhoods. Yes, see answer to Question #2.

- b. Does the transport, containment present the potential for catastrophic explosion or fire danger?

Yes. Recommend this be discussed with the City Fire Chief.

- c. Are coal operations monitored by OSHA?

Unknown on the details of authority at this time; would need additional consultation.

- d. How can ILWU concerns be addressed or mitigated?

See answer to Question #12 for some suggestions related to health effects of coal dust.

ⁱ For West Oakland zip codes 94607, 94608, 94609, and 94612, the overall rate of asthma ED visits is 1014.6 per 100,000 residents; the Alameda County rate is 531.8 per 100,000. The asthma ED visit rate for children (0-4 year-olds) is 1224.3 per 100,000 compared to the Alameda County rate of 929.0 per 100,000. Source: CAPE Unit, Alameda County Public Health Department/ Health Care Services Agency with data from California Office of Statewide Health Planning and Development (OSHPD), 2011-2013.

ⁱⁱ For West Oakland 94607, 94608, 94609, and 94612 the overall rate of asthma inpatient hospitalization is 206.8 per 100,000 residents; the Alameda County rate is 120.6 per 100,000. The childhood (0-4 year-olds) asthma hospitalization rate for West Oakland is 752.3 per 100,000; the county rate is 421.9 per 100,000. Source: CAPE Unit, Alameda County Public Health Department/ Health Care Services Agency with data from California Office of Statewide Health Planning and Development (OSHPD), 2011-2013.

ⁱⁱⁱ For East Oakland zip codes 94601, 94603, 94605 and 94621, the asthma inpatient hospitalization rate is 265.0 per 100,000 residents; the county rate is 120.6 per 100,000. The childhood (0-4 year-olds) asthma hospitalization rate for East Oakland is 899.4 per 100,000; the county rate is 421.9 per 100,000. Source: CAPE Unit, Alameda County Public Health Department/ Health Care Services Agency with data from California Office of Statewide Health Planning and Development (OSHPD), 2011-2013.

^{iv} Source: CAPE Unit, Alameda County Public Health Department/ Health Care Services Agency with data from Alameda County Vital Statistics, 2011-2013.

^v http://media.oregonlive.com/environment_impact/other/AERMOD_Modeling_Morrow_vfin.pdf

^{vi} http://www.atmos.washington.edu/jaffegroup/uploads/Jaffe_2014_trains_final.pdf

^{vii} http://www.tonguerivereis.com/documents/draft_eis/chapters/Ch04_AQ.pdf

^{viii}

http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/CARE%20Program/Documents/CARE_Retr_osperspective_April2014.ashx?la=en

^{ix} From US Department of Labor: https://www.osha.gov/dts/chemicalsampling/data/CH_228895.html, and the *NIOSH Pocket Guide to Chemical Hazards*, which is intended as a source of general industrial hygiene information for workers, employers, and occupational health professionals:

<http://www.cdc.gov/niosh/npg/npgd0144.html>

^x <http://www.eastbayexpress.com/oakland/activists-work-to-stop-east-bay-coal-exports/Content?oid=4301720>

^{xi} Lac Megantic, Quebec crude oil train derailment resulted in 47 deaths, dozens of destroyed buildings, thousands of residents displaced in July, 2013: <http://www.huffingtonpost.com/news/lac-megantic-explosion/>

^{xii} <http://www.arb.ca.gov/toxics/dieseltac/de-fnds.htm>

^{xiii} <http://www.sltrib.com/home/2425141-155/utah-coal-california-here-it-comes>

^{xiv} http://media.oregonlive.com/environment_impact/other/AERMOD_Modeling_Morrow_vfin.pdf

^{xv} http://www.atmos.washington.edu/jaffegroup/uploads/Jaffe_2014_trains_final.pdf

^{xvi} http://www.tonguerivereis.com/documents/draft_eis/chapters/Ch04_AQ.pdf

^{xvii}

http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/CARE%20Program/Documents/CARE_Retr_osperspective_April2014.ashx?la=en

^{xviii} <http://www2.oaklandnet.com/oakca1/groups/ceda/documents/report/oak042281.pdf>

From: [Lee, Anna, Public Health, OOD](#)
To: [Woo, Winnie](#)
Cc: [Cole, Doug](#)
Subject: RE: Follow Up Questions on Coal's Public Health and/or Safety Impacts
Date: Thursday, October 01, 2015 10:44:38 AM

Hi Winnie and Doug,

If we have answered some of these questions in our letter and oral testimony, do you still want us to respond to the questions, at least the ones that are relevant to our expertise? I'm sure you've gotten a lot of information and want to reduce redundancies.

Thank you,
Anna

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Please consider the environment **before** printing this email.

From: Woo, Winnie [mailto:WWoo@oaklandnet.com]
Sent: Tuesday, September 29, 2015 12:29 PM
Cc: Cole, Doug
Subject: Follow Up Questions on Coal's Public Health and/or Safety Impacts

Sending on behalf of Claudia Cappio.

Dear Interested Parties:

Thank you for the very informative oral and written evidence submitted to date as part of the City's September 21, 2015 Public Hearing on the public health and/or safety impacts and other impacts of the transportation, transloading, handling and/or export of coal products in/through the City of Oakland.

Although we are still reviewing the materials submitted before and during the hearing, we are requesting answers be provided to the attached list of questions, some of which are technical and/or legal in nature. Please provide responses **no later than Monday, October 5, 2015 at 4:00pm**. Please direct responses to **Douglas Cole, at dcole@oaklandnet.com**.

The attached letter, all responses received and the written materials submitted as part of the public hearing are (or will be) posted on the City's website at:

<http://www2.oaklandnet.com/Government/o/CityAdministration/d/NeighborhoodInvestment/OAK038485>

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