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MEMORANDUM

TO: Joseph Miller, PE, SCS Engineers
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FROM: David Waymire, BCEE, SCS Engineers
Pat Sullivan, BCES, CPP, REPA, SCS Engineers

SUBJECT: Eastlake Landfill Expansion CEQA Air Quality and Greenhouse Gas Impact Analysis Report

SCS Engineers (SCS) has performed an air quality impact assessment (AQIA) in accordance with California Environmental Quality Act (CEQA) requirements to assess whether estimated emissions associated with proposed expansion of the Eastlake Sanitary Landfill in Lake County, California. Our work entailed an assessment of whether estimated emissions associated with day-to-day landfill operations and new cell construction projects would exceed applicable thresholds of significance for criteria pollutants, toxic emissions, and greenhouse gases (GHG). We specifically assessed potential to emit (PTE) releases to atmosphere for waste decomposition processes, vehicle and heavy equipment exhaust, and particulates from site operations and construction excavations and cover placement.

This AQIA evaluates criteria pollutant, air toxics, and GHG emission increases and compared those to baseline facility emissions.

PROJECT DESCRIPTION

The Eastlake Sanitary Landfill is owned, operated, and managed by the County of Lake (County). The permitted landfill boundary encompasses approximately 80 acres (ac). The current permitted landfill disposal footprint is approximately 35 ac. The County also owns approximately an additional 100 ac northeast and south of the landfill property. These additional parcels are not included in the currently permitted facility boundaries but have been identified as areas for possible landfill expansion. This AQIA addresses the largest of four planned expansion phases.

On-site facilities include a scale house/weigh station, a liquids surface impoundment, and a landfill gas (LFG) collection system with a blower/flare station. The landfill is accessible via the local streets of Davis Street, 40th Street, Phillips Avenue, and Moss Avenue.

It is estimated that the remaining permitted airspace capacity at the landfill will be exhausted as soon as early year 2024. CEQA review, permitting, final design, and construction for the proposed project must be completed by 2023-year end. The proposed landfill expansion would provide long-

term disposal capacity and accommodate public infrastructure needs. No significant changes in day-to-day site operations would be anticipated as a result. The Eastlake Sanitary Landfill is the primary disposal facility for nonhazardous municipal solid wastes (MSW) generated within Lake County. Under Solid Waste Facility Permit No. 17-AA-001 (SFWP No. 17-11-001), current site operations are governed by the following:

- Hours of Operation: 7 days per week (except holidays), 7:30 a.m. to 3:00 p.m.
- Average Daily Intake: 200 tons (equivalent to approximately 70,000 tons per year).
- Maximum Daily Vehicles: 300 vehicles.

County residents and businesses currently generate approximately 40,000 to 50,000 tons of MSW per year requiring disposal at the Eastlake Sanitary Landfill. These totals exclude wildfire debris that has been disposed at the landfill over the period of 2015 through 2018 under waivers allowing additional intake and associated traffic, as granted by the oversight agencies. Over the course of a year, the average daily traffic count is approximately 175 vehicles. This includes deliveries by franchised waste haulers (in packer trucks, roll-off bins, and transfer truck/trailers) and by self-haul customers (the general public, landscapers, and other trades).

The current average daily MSW intake and vehicle traffic counts are generally well below existing permit allowances.

The proposed Project being considered under CEQA would have the same hours of operation as the existing landfill. According to the County, the existing (2019) intake of MSW is approximately 45,600 tons per year, while the anticipated future (2050) intake of MSW is 67,900 tons per year. Therefore, the project would include the intake of an additional 22,300 tons per year of MSW, or approximately 63 additional tons per day of MSW.

Landfill expansion will take place in phases with discrete cells or modules to be constructed every 4 to 9 years. These construction projects will be concurrent with, but independent of day-to-day landfill operations. Four construction phases are envisioned. Phases 1 through 3 will require excavations to reach required cell base grades, stockpiling of excavated soils, and installation of landfill containment systems (soil/geosynthetic base liners and leachate collection and recovery systems). Phase 4 will entail waste filling over previously constructed, lined cells. Heavy equipment use will primarily be a function of soil excavation quantities, haul distances to soil stockpile locations, and scheduling constraints for a typical northern California construction season (mid-April through mid-October). Based on these criteria as presented in the Estimated Heavy Equipment Use Memorandum [1], Phase 2 of the landfill expansion will be the most intensive with respect to heavy equipment use. The total duration of earthwork construction activities are expected to last between 3 and 4 months.

[1] SCS Engineers. 2019. *Eastlake Sanitary Landfill – Estimated Heavy Equipment Use for New Cell Construction in Landfill Expansion Areas*. September.

TECHNICAL BACKGROUND

Air Quality Pollutants and Effects – Criteria Air Pollutants

Criteria air pollutants are defined as those for which federal and state governments have established ambient air quality standards, or criteria, for outdoor concentrations to protect public health. The federal and state standards have been set, with an adequate margin of safety, at levels above which concentrations that could be harmful to human health and welfare. These standards are designed to protect the most sensitive persons from illness or discomfort. Priority pollutants of concern include ozone (O_3), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), particulate matter with an aerodynamic diameter equal to or less than 10 microns (PM_{10}), particulate matter with an aerodynamic diameter equal to or less than 2.5 microns ($PM_{2.5}$), and airborne lead. These pollutants, as well as toxic air contaminants (TACs), are discussed in the following text.[2] In California, sulfates, vinyl chloride, hydrogen sulfide, and visibility-reducing particles are also regulated as criteria air pollutants.

Ozone. O_3 is a strong-smelling, pale blue, reactive, toxic chemical gas consisting of three oxygen atoms. It is a secondary pollutant formed in the atmosphere by a photochemical process involving the sun's energy and O_3 precursors, such as hydrocarbons and NO_x[3]. These precursors are mainly NOx and volatile organic compounds (VOCs). The maximum effects of precursor emissions on O_3 concentrations usually occur several hours after they are emitted and many miles from the source. Meteorology and terrain play major roles in O_3 formation, and ideal conditions occur during summer and early autumn on days with low wind speeds or stagnant air, warm temperatures, and cloudless skies. O_3 exists in stratospheric atmosphere layer as well as at the Earth's surface in the lower troposphere. The O_3 that the Environmental Protection Agency (EPA) and California Air Resources Board (CARB) regulate as a criteria air pollutant is produced close to the ground level, where people live, exercise, and breathe. Ground-level ozone is a harmful air pollutant that causes numerous adverse health effect and is thus, considered "bad" ozone. Stratospheric ozone, or "good" ozone reduces the amount of ultraviolet light (i.e., solar radiation) incident upon the earth. Without the protection of the stratospheric ozone layer, plant and animal life would be seriously harmed.

O_3 near the earth surface causes numerous adverse health effects; short-term exposures (lasting for a few hours) to O_3 at levels typically observed in Northern California can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes. The sick, the elderly, and young children are most sensitive to these ozone affects.

Nitrogen Dioxide. NO_2 is a brownish, highly reactive gas that is present in all urban atmospheres. The major mechanism for the formation of NO_2 in the atmosphere is the oxidation of the primary air pollutant nitric oxide, which is a colorless, odorless gas. NO_x plays a major role, together with VOCs,

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[2] The descriptions of each of the criteria air pollutants and associated health effects are based on the EPA's Criteria Air Pollutants (EPA 2016a) and the California Air Resources Board (CARB) Glossary of Air Pollutant Terms (CARB 2016a).

[3] NO_x is a general term pertaining to compounds of nitric oxide (NO), nitrogen dioxide (NO_2) and other oxides of nitrogen.

in the atmospheric reactions that produce O_3. NO_x is formed from fuel combustion under high temperature or pressure. In addition, NO_x is an important precursor to acid rain and may affect both terrestrial and aquatic ecosystems. The two major emissions sources are transportation and stationary fuel combustion sources such as electric utility and industrial boilers. At landfill sites, potential sources of NO_x emissions are combustion exhaust from waste delivery vehicles, heavy equipment and LFG flares.

NO_2 can irritate the lungs, cause bronchitis and pneumonia, and lower resistance to respiratory infections.

Carbon Monoxide. CO is a colorless, odorless gas formed by the incomplete combustion of hydrocarbon, or fossil fuels. CO is emitted almost exclusively from motor vehicles, heavy equipment, power plants, refineries, industrial boilers, ships, aircraft, and trains. In urban areas, automobile exhaust accounts for the majority of CO emissions. CO is a nonreactive air pollutant that dissipates relatively quickly; therefore, ambient CO concentrations generally follow the spatial and temporal distributions of vehicular traffic. CO concentrations are influenced by local meteorological conditions—primarily wind speed, topography, and atmospheric stability. CO from motor vehicle exhaust can become locally concentrated when surface-based temperature inversions are combined with calm atmospheric conditions. At landfill sites, potential CO emissions sources are typically combustion exhaust from waste delivery vehicles, heavy equipment, and LFG flares.

In terms of adverse health effects, CO competes with oxygen, often replacing it in the blood, reducing the blood's ability to transport oxygen to vital organs. The results of excess CO exposure can include dizziness, fatigue, and impairment of central nervous system functions.

Sulfur Dioxide. SO_2 is a colorless, pungent gas formed primarily from incomplete combustion of sulfur-containing fossil fuels. The main sources of SO_2 are coal and oil used in power plants and industries; as such, the highest levels of SO_2 are generally found near large industrial complexes. At landfill sites, potential sources of SO_2 emissions are combustion exhaust from waste delivery vehicles, heavy equipment, and LFG flares. In recent years, SO_2 concentrations have been reduced by the increasingly stringent controls placed on stationary source emissions of SO_2 and limits on the sulfur content of fuels.

SO_2 is an irritant gas that attacks the throat and lungs and can cause acute respiratory symptoms and diminished ventilator function in children. When combined with particulate matter, SO_2 can injure lung tissue and reduce visibility and the level of sunlight. SO_2 can also yellow plant leaves and erode iron and steel.

Particulate Matter. Particulate matter pollution consists of very small liquid and solid particles floating in the air, which can include smoke, soot, dust, salts, acids, and metals. Particulate matter can form when gases emitted from industries and motor vehicles undergo chemical reactions in the atmosphere. $PM_{2.5}$ and PM_{10} represent fractions of particulate matter. Coarse particulate matter (PM_{10}) is about 1/7 the thickness of a human hair. Major sources of PM_{10} include crushing or grinding operations; dust stirred up by vehicles traveling on roads; wood-burning stoves and fireplaces; dust from construction, landfills, and agriculture; wildfires and brush/waste burning; industrial sources; windblown dust from open lands; and atmospheric chemical and photochemical reactions. Fine particulate matter ($PM_{2.5}$) is roughly 1/28 the diameter of a human hair. $PM_{2.5}$ results from fuel combustion (e.g., from motor vehicles and power generation and industrial facilities), residential fireplaces, and woodstoves. In addition, $PM_{2.5}$ can be formed in the atmosphere from

gases such as sulfur oxides (SO_x), NO_x, and VOCs. At landfill sites, $PM_{2.5}$ and PM_{10} emission sources can include exhaust from LFG flares, and dust from on- and off-road vehicle and equipment use, and soil handling during cover placement and earthmoving operations.

$PM_{2.5}$ and PM_{10} pose a greater health risk than larger-size particles. When inhaled, these tiny particles can penetrate the human respiratory system's natural defenses and damage the respiratory tract. $PM_{2.5}$ and PM_{10} can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. Very small particles of substances such as lead, sulfates, and nitrates can cause lung damage directly or be absorbed into the blood stream, causing damage elsewhere in the body. Additionally, these substances can transport adsorbed gases such as chlorides or ammonium into the lungs, also causing injury. Whereas PM_{10} tends to collect in the upper portion of the respiratory system, $PM_{2.5}$ is so tiny that it can penetrate deeper into the lungs and damage lung tissue. Suspended particulates also damage and discolor surfaces on which they settle and produce haze and reduce regional visibility.

People with influenza, people with chronic respiratory and cardiovascular diseases, and the elderly may suffer worsening illness and premature death as a result of breathing particulate matter. People with bronchitis can expect aggravated symptoms from breathing in particulate matter. Children may experience a decline in lung function due to breathing in PM_{10} and $PM_{2.5}$. Other groups considered sensitive are smokers, people who cannot breathe well through their noses, and exercising athletes (because many breathe through their mouths).

VOCs. Hydrocarbons are organic gases that are formed from hydrogen and carbon and sometimes other elements. Hydrocarbons that contribute to formation of O_3 are referred to and regulated as VOCs (also referred to as reactive organic gases). Combustion engine exhaust, oil refineries, and fossil-fueled power plants are the sources of hydrocarbons. Other sources of hydrocarbons include evaporation from petroleum fuels, solvents, dry cleaning solutions, and paint.

The primary health effects of VOCs result from the formation of O_3 and its related health effects. High levels of VOCs in the atmosphere can interfere with oxygen intake by reducing the amount of available oxygen through displacement. Carcinogenic forms of hydrocarbons, such as benzene, are considered toxic air contaminants (TAC)s. There are no separate health standards for VOCs as a group.

Air Quality Pollutants and Effects – Non-Criteria Air Pollutants

Toxic Air Contaminants. A substance is considered toxic if it has the potential to cause adverse health effects in humans, including increasing the risk of cancer upon exposure, or acute and/or chronic non-cancer health effects. A toxic substance released into the air is considered a TAC. TACs are identified by federal and state agencies based on a review of available scientific evidence. In the State of California, TACs are identified through a two-step process that was established in 1983 under the Toxic Air Contaminant Identification and Control Act. This two-step process of risk identification and risk management and reduction was designed to protect residents from the health effects of toxic substances in the air. The California Air Toxics "Hot Spots" Information and Assessment Act, Assembly Bill (AB) 2588, was enacted by the legislature in 1987 to address public concern over the release of TACs into the atmosphere. The law requires facilities emitting toxic substances to provide local air pollution control districts with information that will allow an assessment of the air toxics problem, identification of air toxics emissions sources, location of

resulting hotspots, notification of the public exposed to potentially significant risk, and development of effective strategies to reduce potential risks to the public over 5 years.

Additionally, California has passed Assembly Bill 617 (AB-617) to address the disproportionate impacts of air pollution in environmental justice communities. AB-617 requires moving toward more uniform statewide reporting, and increases civil and criminal penalties for air pollution violations, adjusting strict liability penalty limits that have not been increased for decades. AB-617 components include:

- Community Emissions Reductions Plans.
- Community Monitoring and Analysis.
- Best Available Retrofit Control Technology implementation.

Examples include certain aromatic and chlorinated hydrocarbons, certain metals, and asbestos. TACs are generated by a number of sources, including stationary sources, such as dry cleaners, gas stations, combustion sources, and laboratories; mobile sources, such as automobiles; and area sources, such as landfills. Adverse health effects associated with exposure to TACs may include carcinogenic (i.e., cancer-causing) and non-carcinogenic effects. Non-carcinogenic effects typically affect one or more target organ systems and may be experienced on either short-term (acute) or long-term (chronic) exposure to a given TAC.

Diesel Particulate Matter. Diesel particulate matter (DPM) is part of a complex mixture that makes up diesel exhaust. Diesel exhaust is composed of two phases, gas and particle, both of which contribute to health risks. The CARB classified "particulate emissions from diesel-fueled engines" (i.e., DPM; 17 CCR 93000) as a TAC in August 1998. DPM is emitted from a broad range of diesel engines: on-road diesel engines of trucks, buses, and cars and off-road diesel engines including locomotives, marine vessels, and heavy-duty construction equipment, among others. Approximately 70% of all airborne cancer risk in California is associated with DPM (CARB 2000). To reduce the cancer risk associated with DPM, CARB adopted a diesel risk reduction plan in 2000 (CARB 2000).

Sensitive Receptors

Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. People most likely to be affected by air pollution include children, the elderly, athletes, and people with cardiovascular and chronic respiratory diseases. Facilities and structures where these air pollution-sensitive people live or spend considerable amounts of time are known as sensitive receptors. Land uses where air pollution-sensitive individuals are most likely to spend time include schools and schoolyards, parks and playgrounds, daycare centers, nursing homes, hospitals, and residential communities (sensitive sites or sensitive land uses) (CARB 2005).

The greatest potential for exposure of sensitive receptors to air contaminants would occur during the four new landfill cell construction phases (temporary projects), when soil would be disturbed and equipment would be used for cell and roadway excavations, soil stockpiling, and site grading. Potential exposure to emissions would vary substantially from day to day, depending on the amount of work being conducted, weather conditions, location of receptors, and exposure time. The construction-phase emissions in this analysis are estimated conservatively based on worst-case conditions, with maximum levels of construction activity occurring simultaneously within a short period of time. The nearest sensitive receptors are scattered rural residential land uses. Residential

land uses have the highest potential to be affected by the project, in particular single-family or multiple-family residences located in the surrounding community within 1 mile (5,280 feet) of the project site.

Regulatory Setting – Federal Regulations

Criteria Air Pollutants

The federal Clean Air Act, passed in 1970 and last amended in 1990, forms the basis for the national air pollution control effort. The EPA is responsible for implementing most aspects of the Clean Air Act, including setting National Ambient Air Quality Standards (NAAQS) for major air pollutants; setting hazardous air pollutant (HAP) standards; approving state attainment plans; setting motor vehicle emission standards; issuing stationary source emission standards and permits; and establishing acid rain control measures, stratospheric O_3 protection measures, and enforcement provisions. Under the Clean Air Act, NAAQS are established for the following criteria pollutants: O_3, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead.

The NAAQS describe acceptable air quality conditions designed to protect the health and welfare of the citizens of the nation. The NAAQS (other than for O_3, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and those based on annual averages or arithmetic mean) are not to be exceeded more than once per year. NAAQS for O_3, NO_2, SO_2, PM_{10}, and $PM_{2.5}$ are based on statistical calculations over 1- to 3-year periods, depending on the pollutant. The Clean Air Act requires the EPA to reassess the NAAQS at least every 5 years to determine whether adopted standards are adequate to protect public health based on current scientific evidence. States with areas that exceed the NAAQS must prepare a state implementation plan that demonstrates how those areas will attain the standards within mandated time frames.

Hazardous Air Pollutants

The 1977 federal Clean Air Act amendments required the EPA to identify National Emission Standards for HAPs (NESHAPs) to protect public health and welfare. HAPs include certain volatile organic chemicals, pesticides, herbicides, and radionuclides that present a tangible hazard, based on scientific studies of exposure to humans and other mammals. Under the 1990 federal Clean Air Act Amendments, which expanded the control program for HAPs, 189 substances and chemical families were identified as HAPs.

Regulatory Setting – State Regulations

Criteria Air Pollutants

The federal Clean Air Act delegates the regulation of air pollution control and the enforcement of the NAAQS to the states. In California, the task of air quality management and regulation has been legislatively granted to CARB, with subsidiary responsibilities assigned to air quality management districts and air pollution control districts at the regional and county levels. CARB, which became part of the California Environmental Protection Agency in 1991, is responsible for ensuring implementation of the California Clean Air Act of 1988, responding to the federal Clean Air Act, and regulating emissions from motor vehicles and consumer products. In Lake County, the designated agency for enforcement of federal and CARB regulations is the Lake County Air Quality Management District (LCAQMD).

CARB has established California Ambient Air Quality Standards (CAAQS), which are generally more restrictive than the NAAQS. The CAAQS describe adverse conditions; that is, pollution levels must be below these standards before a basin can attain the standard. Air quality is considered "in attainment" if pollutant levels are continuously below the CAAQS and violate the standards no more than once each year. The CAAQS for O_3, CO, SO_2 (1-hour and 24-hour), NO_2, PM_{10}, and $PM_{2.5}$ and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. The NAAQS and CAAQS are presented in *Table 1*.

Table 1. Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[a]	National Standards[b]	
		Concentration[c]	Primary[c,d]	Secondary[c,e]
O_3	1 hour	0.09 ppm (180 μg/m³)	—	Same as Primary Standard[f]
	8 hours	0.070 ppm (137 μg/m³)	0.070 ppm (137 μg/m³)[f]	
NO_2[g]	1 hour	0.18 ppm (339 μg/m³)	0.100 ppm (188 μg/m³)	Same as Primary Standard
	Annual Arithmetic Mean	0.030 ppm (57 μg/m³)	0.053 ppm (100 μg/m³)	
CO	1 hour	20 ppm (23 mg/m³)	35 ppm (40 mg/m³)	None
	8 hours	9.0 ppm (10 mg/m³)	9 ppm (10 mg/m³)	
SO_2[h]	1 hour	0.25 ppm (655 μg/m³)	0.075 ppm (196 μg/m³)	—
	3 hours	—	—	0.5 ppm (1,300 μg/m³)
	24 hours	0.04 ppm (105 μg/m³)	0.14 ppm (for certain areas)[g]	—
	Annual	—	0.030 ppm (for certain areas)[g]	—
PM_{10}[i]	24 hours	50 μg/m³	150 μg/m³	Same as Primary Standard
	Annual Arithmetic Mean	20 μg/m³	—	
$PM_{2.5}$[i]	24 hours	—	35 μg/m³	Same as Primary Standard
	Annual Arithmetic Mean	12 μg/m³	12.0 μg/m³	15.0 μg/m³
Lead[j,k]	30-day Average	1.5 μg/m³	—	—
	Calendar Quarter	—	1.5 μg/m³ (for certain areas)[k]	Same as Primary Standard
	Rolling 3-Month Average	—	0.15 μg/m³	
Hydrogen sulfide	1 hour	0.03 ppm (42 μg/m³)	—	—
Vinyl chloride[j]	24 hours	0.01 ppm (26 μg/m³)	—	—
Sulfates	24 hours	25 μg/m³	—	—

Table 1. Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[a]	National Standards[b]	
		Concentration[c]	Primary[c,d]	Secondary[c,e]
Visibility reducing particles	8 hour (10:00 a.m. to 6:00 p.m. PST)	Insufficient amount to produce an extinction coefficient of 0.23 per kilometer due to the number of particles when the relative humidity is less than 70%	—	—

Source: CARB 2016b.

Notes: μg/m^3 = micrograms per cubic meter; CO = carbon monoxide; mg/m^3= milligrams per cubic meter; NO_2 = nitrogen dioxide; O_3 = ozone; PM_{10} = particulate matter with an aerodynamic diameter less than or equal to 10 microns; $PM_{2.5}$ = particulate matter with an aerodynamic diameter less than or equal to 2.5 microns; ppm = parts per million by volume; SO_2 = sulfur dioxide.

[a] California standards for O_3, CO, SO_2 (1-hour and 24-hour), NO_2, suspended particulate matter (PM_{10}, $PM_{2.5}$), and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. CAAQS are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[b] National standards (other than O_3, NO_2, SO_2, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once per year. The O_3 standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over 3 years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 μg/m^3 is equal to or less than 1. For $PM_{2.5}$, the 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, are equal to or less than the standard.

[c] Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based on a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

[d] National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.

[e] National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[f] On October 1, 2015, the national 8-hour O_3 primary and secondary standards were lowered from 0.075 to 0.070 ppm.

[g] To attain the national 1-hour standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 parts per billion (ppb). Note that the national 1-hour standard is in units of ppb. California standards are in units of ppm. To directly compare the national 1-hour standard to the California standards, the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

[h] On June 2, 2010, a new 1-hour SO_2 standard was established, and the existing 24-hour and annual primary standards were revoked. To attain the national 1-hour standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until 1 year after an area is designated for the 2010 standard, except that in areas designated nonattainment of the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

[i] On December 14, 2012, the national annual $PM_{2.5}$ primary standard was lowered from 15 $\mu g/m^3$ to 12.0 $\mu g/m^3$. The existing national 24-hour $PM_{2.5}$ standards (primary and secondary) were retained at 35 $\mu g/m^3$, as was the annual secondary standard of 15 $\mu g/m^3$. The existing 24-hour PM_{10} standards (primary and secondary) of 150 $\mu g/m^3$ were also retained. The form of the annual primary and secondary standards is the annual mean averaged over 3 years.

[j] CARB has identified lead and vinyl chloride as TACs with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

[k] The national standard for lead was revised on October 15, 2008, to a rolling 3-month average. The 1978 lead standard (1.5 $\mu g/m^3$ as a quarterly average) remains in effect until 1 year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

Toxic Air Contaminants

The state Air Toxics Program was established in 1983 under AB 1807 (Tanner). The California TAC list identifies more than 700 pollutants, of which carcinogenic and non-carcinogenic toxicity criteria have been established for a subset of these pollutants pursuant to the California Health and Safety Code. In accordance with AB 2728, the state list includes the (federal) HAPs. The Air Toxics "Hot Spots" Information and Assessment Act of 1987 (AB 2588) seeks to identify and evaluate risk from air toxics sources; however, AB 2588 does not regulate air toxics emissions. TAC emissions from individual facilities are quantified and prioritized. "High-priority" facilities are required to perform a health risk assessment, and if specific thresholds are exceeded, are required to communicate the results to the public in the form of notices and public meetings.

In 2000, CARB approved a comprehensive Diesel Risk Reduction Plan to reduce diesel emissions from both new and existing diesel-fueled vehicles and engines. The regulation is anticipated to result in an 80% decrease in statewide diesel health risk in 2020 compared with the diesel risk in 2000. Additional regulations apply to new trucks and diesel fuel, including the On-Road Heavy Duty Diesel Vehicle (In-Use) Regulation, the On-Road Heavy Duty (New) Vehicle Program, the In-Use Off-Road Diesel Vehicle Regulation, and the New Off-Road Compression-Ignition (Diesel) Engines and Equipment program. All of these regulations and programs have timetables by which manufacturers must comply and existing operators must upgrade their diesel powered equipment. Several Airborne Toxic Control Measures that reduce diesel emissions including In-Use Off-Road Diesel-Fueled Fleets (13 CCR 2449 et seq.) and In-Use On-Road Diesel-Fueled Vehicles (13 CCR 2025).

California has recently passed Assembly Bill 617 (AB-617) to address the disproportionate impacts of air pollution in environmental justice communities. AB-617 requires moving toward more uniform statewide reporting, and increases civil and criminal penalties for air pollution violations, adjusting strict liability penalty limits that have not been increased for decades. AB-617 components include:

- Community Emissions Reductions Plans.

- Community Monitoring and Analysis.
- Best Available Retrofit Control Technology implementation.

In the future, landfills like Eastlake Sanitary Landfill may have to complete additional TAC emission inventories and other tasks to comply with AB-617.

California Health and Safety Code Section 41700

This section of the Health and Safety Code states that a person shall not discharge from any source whatsoever quantities of air contaminants or other material that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public; or that endanger the comfort, repose, health, or safety of any of those persons or the public; or that cause, or have a natural tendency to cause, injury or damage to business or property. This section also applies to sources of objectionable odors.

APPLICABLE AIR QUALITY STANDARDS – THRESHOLDS OF SIGNIFICANCE

The LCAQMD does not have published CEQA thresholds of significance, and for the purposes of this analysis SCS used Bay Area Air Quality Management District (BAAQMD) "Thresholds of Significance" contained within BAAQMD CEQA Air Quality Guidelines4. According to the 2019 CEQA checklist, a project may be deemed to have a potentially significant adverse impact on the environment if it would expose the surrounding public to the following.

Operations Impacts – Daily

Based on the BAAQMD CEQA guidelines, operational impacts from a proposed project are considered potentially significant under CEQA if the project results in a net emissions increase of the following daily emissions for operations related activity:

- 54 pounds per day of VOC,
- 54 pounds per day of NO_x,
- 82 pounds per day of PM_{10} (exhaust), or
- 54 pounds per day of $PM_{2.5}$ (exhaust).

Operations Impacts – Annual

Based on the BAAQMD CEQA guidelines, operational impacts from a proposed project are considered potentially significant under CEQA if the project resulted in a net emissions increase of the following annual emissions for operations related activity:

- 10 tons per year of VOC,
- 10 tons per year of NO_x,

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[4] BAAQMD CEQA Air Quality Guidelines, Table 2-1, "Air Quality CEQA Thresholds of Significance." http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en

- 15 tons per year of PM_{10} (exhaust), or
- 10 tons per year of $PM_{2.5}$ (exhaust).

Construction Impacts

Based on the BAAQMD CEQA guidelines, construction impacts from a proposed project are considered potentially significant under CEQA if the project resulted in a net emissions increase of the following daily emissions for construction related activity:

- 54 pounds per day of VOC,
- 54 pounds per day of NO_x,
- 82 pounds per day of PM_{10} (exhaust), or
- 54 pounds per day of $PM_{2.5}$ (exhaust).

Sensitive Receptors Impacts for New Sources and Receptors (Individual Project) – Operational and Construction Activity – TACs

According to the 2019 CEQA checklist, a project may be deemed to have a potentially significant adverse impact on the environment if it would expose sensitive receptors to substantial pollutant concentrations. Sensitive receptor impacts occur for receptors within a 1,000-foot "zone of influence," from facility property line that have the following threshold values:

- Increased cancer risk of >10 in one million,
- Increased non-cancer risk of > 1.0 hazard index (Chronic or Acute), or
- Ambient PM2.5 increase > 0.3 ug/m^3.

Sensitive Receptors Impacts for New Sources and Receptors (Cumulative Threshold) – Operational and Construction Activity – TACs

Sensitive receptor impacts may occur for the following receptors within a 1000 foot "zone of influence," from facility property line that have the following threshold values:

- Increased cancer risk of >100 in one million (from all local sources),
- Increased non-cancer risk of > 10.0 chronic hazard index (from all local sources), or
- Ambient PM2.5 increase > 0.8 ug/m^3 (from all local sources).

Local Carbon Monoxide

Local carbon monoxide impacts may occur if local concentrations of 9.0 ppm averaged over 8 hours, or 20.0 ppm averaged over one hour occur.

Accidental Release of Acutely Hazardous Air Pollutants

The storage or use of acutely hazardous materials located near receptors are considered potentially significant.

Odors

Project odors are considered potentially significant if there are five confirmed complaints per year averaged over three years.

Greenhouse Gases (GHGs)

Operational related GHG emissions are considered significant when the combined emissions of all GHG emittants equivalently related emissions exceed 1,100 metric tons per year.

ENVIRONMENTAL SETTING

The project site is located immediately adjacent to the City of Clearlake and is within the boundaries of the Lake County Air Basin (LCAB). The LCAQMD is responsible for air quality within the LCAB. Lake County is located approximately 100 miles north of San Francisco. The LCAB experiences a Mediterranean-like climate of hot dry summers and cool, moist winters. Seasonally, the majority of rainfall occurs from October through March. The warmest period of the year occurs from June through September. Project activities are subject to the authority of the LCAQMD and CARB. The LCAQMD is listed as “attainment” or “unclassified” for all the federal and State ambient air quality in Lake County.

In determining whether a project has significant air quality impacts on the environment, agencies often apply their local air district’s thresholds of significance to project in the review process. LCAQMD has not adopted any CEQA guidelines or thresholds that are used to determine the significance of a project’s emissions. Consequently, this analysis uses Bay Area Air Quality Management District’s (BAAQMD’s) CEQA Air Quality Guidelines, last revised in May 2011. The Air Quality Guidelines advise lead agencies on how to evaluate potential air quality impacts, including establishing quantitative and qualitative thresholds of significance.

AIR QUALITY IMPACT ANALYSIS

This AQIA is based on Appendix G of CEQA Guidelines and the BAAQMD CEQA guidelines. The discussion not only includes the subjects for which there are potential for impacts but also provides justification for conclusions that either no impacts, less-than-potentially significant impacts, or less-than-potentially significant impacts with mitigation could occur. The CEQA Analysis Checklist questions and the environmental significance conclusion appear under each environmental parameter, followed by a discussion supporting each conclusion.

The LCAQMD defers to the BAAQMD “Thresholds of Significance” contained within its CEQA Air Quality Guidelines. According to the 2019 CEQA checklist, a project may be deemed to have a potentially significant adverse impact on the environment if it would conflict with or obstruct implementation of the applicable air quality plan, result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard, expose sensitive receptors to substantial pollutant concentrations, result in other emissions (such as those leading to odors), adversely affecting a substantial number of people. With regard to GHGs, a project may be deemed to have a potentially significant adverse impact on the environment if it would generate GHG emissions, either directly or indirectly, that may have a potentially significant impact on the environment, or conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

Criteria Pollutants and Air Toxics

III. AIR QUALITY: *Would the project*:	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
A. Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
B. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☒	☐	☐
C. Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
D. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☒	☐

Discussion

Standards and ordinances applicable to the proposed project would be associated with day-to-day landfill operations, future landfill operations, and new cell construction. The proposed project consists of temporary construction activities over the course of four expansion phases, and continuation of current landfill operations (waste deliveries, placement and compaction, daily and intermediate cover placement, LFG capture and control) throughout the project lifetime.

This section analyzes the short-term air quality impacts associated with construction activities as well as the long-term operational impacts that may result due to development of the proposed project.

Impact Analysis

a. Would the project conflict or obstruct implementation of the applicable air quality plan?

Impact – Less Than Significant

LCAQMD is in attainment for all criteria air pollutants and does not have an air quality management plan.

b. Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

Daily Operations Impacts – Less Than Significant

Estimated daily emissions from current landfill operations, and those from proposed future operations are tabulated below in Tables 2 through 4. Current operations are represented by the

year 2024 when this project is anticipated to commence. Future operating emissions will be maximum in the project impact year 2050. Daily operating emissions include those resulting from waste decomposition processes, LFG flare exhaust, waste delivery vehicle and heavy equipment exhaust, particulates and dust from site operations (vehicle and equipment travel on paved and paved and unpaved roads, and daily cover soil excavation and placement. Exhaust emissions occur from diesel and internal combustion engines from vehicles, trucks, and heavy equipment. Particulate emissions occur from heavy equipment performing earthmoving activity and fugitive particulate emissions from earthmoving travel and waste haul travel on paved and unpaved roads. These estimated emission changes are for comparison to BAAQMD CEQA emissions thresholds of significance to determine if significant impacts may occur. Worksheets with details on emission estimate calculations, governing assumptions and results are provided in *Attachment 1*.

Table 2. Daily Emissions Estimates, Current Landfill Operations

Current Daily Estimated Emissions (lbs/day)	ROG	NO_x	PM_{10}	$PM_{2.5}$
2024 Traffic Exhaust	3.8E-03	2.1E-01	1.6E-03	1.4E-03
Current Unpaved Roads	NA	NA	6.47	0.65
Current Paved Roads	NA	NA	0.74	0.18
Current Flare	12.65	16.20	5.51	5.51
Current Landfill Gas	10.2	NA	NA	NA

Table 3. Daily Emissions Estimates, Future Landfill Operations

Future Daily Estimated Emissions (lbs/day)	ROG	NO_x	PM_{10}	$PM_{2.5}$
2050 Traffic Exhaust	2.92E-03	3.21E-01	7.20E-04	6.74E-04
Future Unpaved Roads	NA	NA	9.28	0.93
Future Paved Roads	NA	NA	0.98	0.24
Future Flare	27.40	35.10	11.93	11.93
Future Landfill Gas	12.87	NA	NA	NA

Table 4. Net Project Daily Emissions Estimates

Net Project Daily Estimated Emissions (lbs/day)	ROG	NO_x	PM_{10}	$PM_{2.5}$
Project Traffic Exhaust	-8.6E-04	1.1E-01	-8.4E-04	-7.7E-04
Project Unpaved Roads			2.8E+00	2.8E-01
Project Paved Roads			2.4E-01	6.0E-02
Project Flare	1.5E+01	1.9E+01	6.4E+00	6.4E+00
Project Landfill Gas	2.6E+00	NA	NA	NA
Net Project Daily Estimated Emissions	1.7E+01	1.9E+01	9.5E+00	6.8E+00
BAAQMD Significance Threshold	54	54	82	54
Potentially significant Impact?	No	No	No	No

Operational daily estimated emissions from the project are considered less than potentially significant.

Annual Operational Impacts – Less Than Potentially Significant

Estimated annual emissions from current landfill operations, and those from proposed future operations are summarized in Tables 5 through 7 below. Current operations are represented by the year 2024 when this project is anticipated to commence. Future operating emissions will be maximum in the project impact year 2050. Daily operating emissions that are affected by the project include waste decomposition, and LFG flare exhaust. Particulate emissions occur from vehicles, trucks and heavy equipment performing earthmoving activity and fugitive particulate emissions from waste haul traveling on paved and unpaved roads. Exhaust emissions occur from diesel and internal combustion engines from vehicles, trucks, and heavy equipment. These estimated emission changes are for comparison to BAAQMD CEQA emissions thresholds of significance to determine if significant impacts may occur. Worksheets with details on emission estimate calculations, governing assumptions and results are provided in *Attachment 1*.

Table 5. Annual Emissions Estimates, Current Landfill Operations

Current Annual Estimated Emissions (tons/year)	ROG	NO_x	PM_{10}	$PM_{2.5}$
2024 Waste Delivery Traffic Exhaust	6.1E-04	2.7E-02	2.6E-04	2.4E-04
Vehicle/Equipment Travel - Unpaved Roads	NA	NA	0.97	0.10
Vehicle/Equipment Travel - Paved Roads	NA	NA	0.13	0.03
Current Flare Exhaust	2.31	2.96	1.01	1.01
Uncontrolled LFG Surface Emissions	1.9	NA	NA	NA

Table 6. Annual Emissions Estimates, Future Landfill Operations

Future Annual Estimated Emissions (tons/year)	ROG	NO_x	PM_{10}	$PM_{2.5}$
2050 Waste Delivery Traffic Exhaust	4.3E-04	4.1E-02	1.1E-04	1.0E-04
Vehicle/Equipment Travel - Unpaved Roads	NA	NA	1.37	0.14
Vehicle/Equipment Travel - Paved Roads	NA	NA	0.16	0.04
Future Flare Exhaust	5.00	6.41	2.18	2.18
Uncontrolled LFG Surface Emissions	2.3	NA	NA	NA

Table 7. Net Project Annual Emissions Estimates

Project Annual Estimated Emissions (tons/year)	ROG	NO_x	PM_{10}	$PM_{2.5}$
Project Waste Delivery Traffic Exhaust	-1.8E-04	1.3E-02	-1.5E-04	-1.4E-04
Project Vehicle/Equipment Travel - Unpaved Roads	NA	NA	4.0E-01	4.0E-02
Project Vehicle/Equipment Travel - Paved Roads	NA	NA	3.9E-02	9.6E-03
Project Flare Exhaust	2.7E+00	3.4E+00	1.2E+00	1.2E+00
Project Uncontrolled LFG Surface Emissions	4.8E-01	NA	NA	NA
Net Project Annual Estimated Emissions	3.2E+00	3.5E+00	1.6E+00	1.2E+00
BAAQMD Threshold of Significance	10	10	15	10
Potentially Significant Impact?	No	No	No	No

Operational annual estimated emissions are considered less than potentially significant.

Landfill Cell Construction Impacts – Less-Than-Significant with Mitigation

Estimated daily emissions associated with proposed new landfill cell construction projects are summarized below in Table 8. There will be four new cell construction projects over the project lifetime, with discrete cells or modules to be constructed every 4 to 9 years. Phases 1 through 3 will require excavations to reach required cell base grades, stockpiling of excavated soils, and installation of landfill containment systems (soil/geosynthetic base liners and leachate collection and recovery systems). Phase 4 will entail waste filling over previously constructed, lined cells. These projects will be short-term, typically 3 to 4 months duration. Estimates of daily emissions from these construction activities include those from heavy equipment engine exhaust, and fugitive particulate emissions from heavy equipment travel over unpaved roads, and fugitive particulate emissions from soil excavation and stockpiling activities. Worksheets with details on emission estimate calculations, governing assumptions and results are provided in *Attachment 1*.

Table 8. Daily Emission Estimates – Landfill New Cell Construction Projects

Construction Daily Estimated Emissions (lbs/day)	ROG	NO_x	PM_{10}	$PM_{2.5}$
Soil Excavation / Earthworks	NA	NA	52.95	6.15
Base Liner Construction Earthworks	NA	NA	2.69	0.27
Heavy Equipment Exhaust – Soil Excavation	12.74	65.94	2.30	2.30
Heavy Equipment Exhaust – Base Liner Construction	1.93	11.10	0.48	0.48
Soil Stockpile	NA	NA	2.08	0.32
Total Estimated Daily Construction Emissions	14.7	77.04	60.5	9.5
BAAQMD CEQA Daily Emissions Threshold	54	54	82	54
Pass CEQA Screening Threshold?	Yes	No	Yes	Yes

Construction related thresholds for NO_x exceed standards and are considered potentially significant without mitigation.

Eastlake Sanitary Landfill provides waste disposal services to the County. The quantity of waste generated will not be reduced by denial of this landfill expansion resource. This waste must be disposed by some landfill resource. The alternative to this landfill expansion is to ship generated waste to another landfill far away which would cause even higher criteria pollutant emissions. Impacts for construction of expansion cells will occur wherever waste is disposed and this construction activity for the 26-year fill cycle from 2024 to 2050 will only occur for approximately 240 days and provide a disposal operating period of approximately 9,500 days.

During new cell construction projects the County will conduct a series of mitigation measures to ensure minimization of NO_x emission from heavy equipment. These measures may include some or all of the following:

- Limiting vehicle speeds to 15 miles per hour.
- Minimizing idling times either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control

measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.

- All Construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.

- Minimizing the idling time of diesel powered construction equipment to two minutes.

- Developing a plan demonstrating that the off-road equipment (more than 50 horsepower) to be used in the construction project (i.e., owned, leased, and subcontractor vehicles) would achieve a project wide fleet-average 20 percent NO_x reduction compared to the most recent ARB fleet average. Acceptable options for reducing emissions may include the use of late model engines, low-emission diesel products, and/or other options as such become available.

- Requiring that all construction equipment, diesel trucks, and generators be equipped with Best Available Control Technology for emission reductions of NO_x.

- Requiring all contractors use equipment that meets CARB's most recent certification standard for off-road heavy duty diesel engines.

The County can implement a variety of these possible options. Considering the fleet-average 20 percent NOx reduction above, combined with a variety of these other mitigation options, it can be assumed that a combined total 40 percent reduction in NO_x emissions would result. With mitigation, daily NO_x emissions during construction are thus estimated to be 46.2 lbs/day, which is below the cited threshold of 54 lbs/day. Therefore construction impacts will be less than potentially significant with mitigation measures.

c. Expose sensitive receptors to substantial pollutant concentrations?

Impacts – Less Than Potentially Significant

Toxic air impacts. Toxic air impacts to residential and occupational locations from facility emissions were evaluated by determining landfill-related, offsite air contaminant transport, and resulting concentrations over a regular gridded area around the facility were estimated. These concentrations were then evaluated for potential exposure impacts. The offsite concentrations were determined using the American Meteorological Society (AMS) and preferred EPA Regulatory Model AERMOD. AERMOD input variables and output of unity emission concentrations that determine the dispersion field are provided in *Attachment 2*. Resulting AERMOD concentrations were then evaluated for the risk of obtaining cancerous, and non-cancerous long term (chronic) and short term (acute) health impacts. Since the BAAQMD does not have a well-defined tiered health risk assessment approach, these cancer and non-cancer impacts were evaluated using the South Coast Air Quality Management District Risk Assessment Procedures. A summary of these resulting maximum health impacts are provided below in Table 9. Worksheets with details on risk assessment model governing assumptions and results are provided in *Attachment 2*.

Table 9. Health Risk Assessment

Exposure Characterization	Potential Impact	BAAQMD Significance Threshold	Potentially Significant Impact?
Cancer Risk- Worker	2.80E-07	1.0E-05	No
Cancer Risk- Resident	3.82E-06	1.0E-05	No
Chronic Hazard Index- Worker	8.10E-02	1.0	No
Chronic Hazard Index- Resident	3.82E-01	1.0	No
Acute Hazard Index- Worker	3.54E-02	1.0	No
Acute Hazard Index- Resident	3.57E-02	1.0	No

As shown in Table 9, the potential exposures of sensitive receptors to landfill-related toxic air contaminant concentrations are below established thresholds and are therefore considered less than potentially significant.

Carbon monoxide emissions. One hour and eight-hour average concentrations of CO we determined over a regular grid surrounding the facility using AERMOD. The AERMOD input and output values, and maximum resulting concentrations of CO over this grid are provided in *Attachment 3*. Resulting one-hour and eight-hour averaged maximum concentrations of CO are 290 micrograms per cubic meter and 84 micrograms per cubic meter, respectively. Both of these concentrations fall below the BAAQMD significance thresholds of 23,000 micrograms per cubic meter (20 ppm) for one-hour average, and 10,000 micrograms per cubic meter (9 ppm) for eight-hour averaging periods. Therefore, the exposure of sensitive receptors to substantial carbon monoxide concentrations is considered less than potentially significant.

d. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Acutely HAP Impacts – Less Than Potentially Significant

BAAQMD sets the standard of significance for accidental releases of acutely hazardous air pollutants as potentially significant if a facility stores or uses acutely hazardous materials that are locating near receptors or if new receptors are locating near stored or used acutely hazardous materials that are considered potentially significant. The County does not store acutely hazardous materials near existing receptors, nor will new receptors be located near and stored acutely hazardous materials at the landfill. Therefore, acutely HAP impacts are insignificant.

Odor Impacts – Less Than Potentially Significant

BAAQMD standard for odor threshold significance is five confirmed complaints per year averaged over 3 years. LCAQMD has not received five odor complaints per year averaged over three years. Odor control at Eastlake Sanitary Landfill is accomplished with good landfill management practices

including the application of daily cover materials. The Class II surface impoundment and pumping station are properly managed to avoid causing an odor nuisance to adjacent residents in compliance with LCAQMD standards. Therefore, odor impacts are less than potentially significant.

Dust Impacts – Less Than Potentially Significant

Measures are taken to minimize the creation, emission or accumulation of excessive dust and particulates, and prevent other safety hazards to the public caused by obscured visibility. Unnecessary handling of wastes during processing prevents the creation of excessive dust. Staff has the capability to spray water on refuse loads that contain materials that would produce dust or other particulates during offloading or compacting activities.

The access road inside the landfill facility is paved from the facility entrance to the tipping area to prevent dust. Paving surrounds the gatehouse and the bagdump area. The access road and bagdump area are watered approximately three times per month in the summer and two to five times per week in the winter by the facility 3,500 gallon water truck to remove accumulated dust, dirt and mud, and prevent dust and prevent offsite tracking of dust or dirt. The water truck is operated by staff, and the water is drawn from Clear Lake which is approximately 2 miles from the landfill. The road is also swept weekly by a regenerative sweeper to remove other dirt and/or debris that may fall from entering or exiting vehicles. Where visible tracking has occurred, a mechanical sweeper is utilized as needed. These practices are expected to continue throughout the landfill expansion project lifetime.

At the point where the access road pavement ends at the entrance to the tipping area, temporary dirt roads to the current tipping road are kept graded and compacted. Road base material is added for stability as well as erosion and dust control and to prevent offsite tracking. The site water truck sprays these areas frequently during dry periods to control dust. Additionally, magnesium chloride may be applied by a commercial contractor on the dirt access roads to control dust.

Grading, scraping, loading and compacting operations are also supported by use of the water truck in the tipping area and the borrow area. The tarp, which is used for daily cover most days in lieu of dirt cover, reduces dust associated with dirt cover. When dirt stockpiles are used for cover material on days when the tarp is not used, they are kept close to the working face to reduce dust associated with the loading and hauling of these materials. Therefore, dust impacts are less than potentially significant.

Greenhouse Gases

Setting

Greenhouse gases are gases in the atmosphere that absorb and emit radiation. The greenhouse effect traps heat in the troposphere through a three-fold process, summarized as follows: short wave radiation emitted by the sun is absorbed by the earth; the earth emits a portion of this energy in the form of long wave radiation; and GHGs in the upper atmosphere absorb this long wave radiation and emit this long wave radiation into space and toward the Earth. This "trapping" of the long wave (thermal) radiation emitted back toward the Earth is the underlying process of the greenhouse effect. The main GHGs in the Earth's atmosphere are water vapor, carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), O_3, hydrofluorocarbons (HCFs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6).

California has passed Assembly Bill 32, mandating a reduction in GHG emissions and Senate Bill 97, evaluating and addressing GHG under CEQA. On April 13, 2009, Governor's Office of Planning and Research (OPR) submitted to the Secretary for Natural Resources its proposed amendments to the state CEQA Guidelines for GHG emission, as required by Senate Bill 97 and they became effective March 18, 2010. As a result of these revisions to the CEQA Guidelines, lead agencies are obligated to determine whether a project's GHG emissions significantly affect the environment and to impose feasible mitigation to eliminate or substantially lessen any such significant effects.

Landfills are considered a potential source of GHG emissions. This can result from uncontrolled surface emissions of LFG (by-product of waste decomposition processes) which contains both CH_4 and CO_2. An LFG collection and control system (GCCS) is currently in place at the Eastlake Landfill, and is operated in accordance with California's Landfill Methane Rule (LMR), which was promulgated specifically for controlling GHG emissions, and LCAQMD permit conditions. Collected LFG is thermally destroyed in the gas flare. During the landfill expansion project lifetime, the GCCS wellfield (collection wells, trenches and piping) will be expanded laterally concurrent with fill operations and as required by regulation and permit conditions.

According to the 2019 CEQA checklist, a project may be deemed to have a potentially significant adverse impact on the environment if it would generate GHG emissions, either directly or indirectly, that may have a potentially significant impact on the environment, or conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

VIII. GREENHOUSE GAS EMISSIONS: *Would the project:*	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
A. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☐	☒
B. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gasses?	☐	☐	☐	☒

Discussion

Standards and ordinances applicable to the proposed project would be associated with day-to-day landfill operations and future landfill operations. The proposed project consists of operations over the course of four expansion phases. This section analyzes the long-term operational impacts that may result due to development of the proposed project.

Impact Analysis

a. Would the project generate GHGs, either directly or indirectly, that may have a significant impact on the environment?

Direct Impacts – Less than Potentially Significant with Mitigation

The LCAQMD defers to the BAAQMD "Thresholds of Significance," contained within its CEQA Air Quality Guidelines. GHG significance thresholds apply only to operational activity increases. There

are no construction related GHG significant thresholds. Based on the BAAQMD CEQA guidelines, operational impacts from a proposed project are considered potentially significant under CEQA if the project resulted in a net emissions increase of 1,100 metric tons of CO_2 equivalent emissions (CO_{2e}) for operational related activity.

Annual GHG operation related estimated emissions summary is provided below in Table 10. Worksheets with details on GHG emission estimate calculations, governing assumptions and results are provided in *Attachment 1 (*Tables 1.9, and 1.10).

Table 10. Greenhouse Gas Emission Estimates

Annual Estimated Emissions (tons/year)	CO_2	CH_4	CH_4 GWP[1]	N_2O	N_2O GWP[1]	CO_{2e}
Future Landfill Traffic Exhaust (2050)	34.5	0.0001	21	0.002	310	35.2
Future Landfill Gas (2050)	2579	940	21		310	22,316
Current Landfill Traffic Exhaust (2024)	36.0	0.0002	21	0.002	310	36.5
Current Landfill Gas (2024)	2048	746	21		310	17,723

Project Emissions C_{O2e} TPY rate growth – 26 years	4591
Project Emissions CO_{2e} MT/Year rate growth – 26 years	4174
Average CO_{2e} MT/year rate increase per year	161
BAAQMD Threshold (MT)[2]	1100
Exceeds BAAQMD Threshold	No

1 http://www.baaqmd.gov/~/media/files/planning-and-research/emission-inventory/by2011_ghgsummary.pdf (Table B)

2 BAAQMD CEQA Air Quality Guidelines, Table 2-1.

Direct GHG estimated emissions will be less than significant.

Indirect Impacts – Less than Potentially Significant

With regards to indirect emissions, this Eastlake Sanitary landfill project will provide capacity for refuse that otherwise would have to be shipped out to landfills further away. Therefore, this project will reduce indirect GHGs that otherwise would require substantial on-road vehicle miles traveled.

Indirect GHG estimated emissions will be less than significant.

b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gasses?

Impact – Less Than Significant

LCAQMD is in attainment for all criteria air pollutants, does not have an air quality management plan, and does not have a GHG reduction plan.

ATTACHMENTS

Attachment 1 – Air Emission and GHG Estimate Worksheets

Table 1.1 – 2050 Landfill Traffic Exhaust Emissions (Future)
Table 1.2 – 2024 Landfill Traffic Exhaust Emissions (Current)
Table 1.3 – Future Potential to Emit Fugitive Dust Emissions from Unpaved Roadways
Table 1.4 – Current Potential to Emit Fugitive Dust Emissions from Unpaved Roadways
Table 1.5 – Future Potential to Emit Fugitive Dust Emissions from Paved Roadways
Table 1.6 – Current Potential to Emit Fugitive Dust Emissions from Paved Roadways
Table 1.7 – Potential to Emit Estimates for Future Landfill Gas Flare
Table 1.8 – Potential to Emit Estimates for Existing Landfill Gas Flare
Table 1.9 – Potential to Emit Estimates for Proposed Permitted Capacity Landfill
Table 1.10 – Potential to Emit Estimates for Current Permitted Capacity Landfill
Table 1.11 – New Cell Excavation Earthworks Potential to Emit
Table 1.12 – Base Liner Cell Earthworks Potential to Emit
Table 1.13 – New Cell Excavation Earthworks Exhaust Potential to Emit
Table 1.14 – Base Liner Cell Earthworks Exhaust
Table 1.15 – Potential to Emit Fugitive Dust Emissions from Excavation Stockpiles

Attachment 2 – Health Risk Assessment

AERMOD Dispersion Input/Output
Table 2.1 – Cancer Risk- Worker
Table 2.2 – Cancer Risk- Resident
Table 2.3 – Chronic Hazard- Worker
Table 2.4 – Chronic Hazard- Resident
Table 2.5 – Acute Hazard- Worker
Table 2.6 – Acute Hazard- Resident

Attachment 3 – Carbon Monoxide Analysis

AERMOD Dispersion Input/Output
CO Results Summary

Attachment 1

Air Emission and GHG Estimate Worksheets

TABLE 1.1
2050 LANDFILL TRAFFIC EXHAUST EMISSIONS (FUTURE)
EASTLAKE LANDFILL
CLEAR LAKE, CALIFORNIA

Length of Road	5600.0	feet
One pound	453.6	grams
One ton	2000.0	pounds

Emission Factors [1]

Equipment	Category	Model Year	Speed	Fuel	ROG_RUNEX (grams/mile)	TOG_RUNEX (grams/mile)	CO_RUNEX (grams/mile)	NOx_RUNEX (grams/mile)	SOx_RUNEX (grams/mile)	CO2_RUNEX (grams/mile)	CH4_RUNEX (grams/mile)	PM10_RUNEX (grams/mile)	PM2_5_RUNEX (grams/mile)	N2O_RUNEX (grams/mile)
Public Self Haul	LDT1	2044	20	GAS	3.26E-03	4.75E-03	5.42E-01	2.15E-02	2.88E-03	2.91E+02	1.22E-03	9.79E-04	9.01E-04	3.81E-03
Commercial Self Haul	LHD2	2044	20	GAS	5.40E-03	7.89E-03	1.51E-01	0.00E+00	9.38E-03	9.48E+02	1.77E-03	2.28E-03	2.10E-03	0.00E+00
Franchise	HHDT	2044	20	DSL	2.54E-02	2.90E-02	4.08E-01	4.64E+00	1.32E-02	1.40E+03	1.18E-03	4.87E-03	4.66E-03	2.20E-01

Daily Emissions

Equipment	Category	Vehicle (Trips/Day)	Vehicle (Miles /Trip)	Vehicle (Miles/Day)	ROG (lbs/day)	TOG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)	N2O (lbs/day)
Public Self Haul	LDT1	126	1.061	133.64	9.59E-04	1.40E-03	1.60E-01	6.34E-03	8.47E-04	8.56E+01	3.60E-04	2.89E-04	2.65E-04	1.12E-03
Commercial Self Haul	LHD2	19	1.061	20.15	2.40E-04	3.50E-04	6.72E-03	0.00E+00	4.17E-04	4.21E+01	7.84E-05	1.01E-04	9.32E-05	0.00E+00
Franchise	HHDT	29	1.061	30.76	1.73E-03	1.96E-03	2.76E-02	3.15E-01	8.96E-04	9.49E+01	8.01E-05	3.30E-04	3.16E-04	1.49E-02

Annual Emissions

Equipment	Category	Vehicle (Trips/Year)	Vehicle (Miles/Trip)	Vehicle (Miles/Year)	ROG (tons/year)	TOG (tons/year)	CO (tons/year)	NOx (tons/year)	SOx (tons/year)	CO2 (tons/year)	CH4 (tons/year)	PM10 (tons/year)	PM2.5 (tons/year)	N2O (tons/year)
Public Self Haul	LDT1	44440	1.061	47133.33	1.69E-04	2.47E-04	2.82E-02	1.12E-03	1.49E-04	1.51E+01	6.34E-05	5.09E-05	4.68E-05	1.98E-04
Commercial Self Haul	LHD2	6800	1.061	7212.12	4.30E-05	6.27E-05	1.20E-03	0.00E+00	7.46E-05	7.54E+00	1.40E-05	1.81E-05	1.67E-05	0.00E+00
Franchise	HHDT	7260	1.061	7700.00	2.16E-04	2.46E-04	3.46E-03	3.94E-02	1.12E-04	1.19E+01	1.00E-05	4.13E-05	3.95E-05	1.87E-03

Emissions Summary

	ROG	TOG	CO	Nox	Sox	CO2	CH4	PM10	PM2.5	N2O
Daily Emissions	2.92E-03	3.71E-03	1.94E-01	3.21E-01	2.16E-03	2.23E+02	5.18E-04	7.20E-04	6.74E-04	1.60E-02
Annual Emissions	4.28E-04	5.55E-04	3.28E-02	4.05E-02	3.36E-04	3.45E+01	8.75E-05	1.10E-04	1.03E-04	2.06E-03

[1] EMFAC 2017: https://ww2.arb.ca.gov/our-work/programs/mobile-source-emissions-inventory/road-documentation/msei-modeling-tools-emfac

TABLE 1.2
2024 LANDFILL TRAFFIC EXHAUST EMISSIONS (CURRENT)
EASTLAKE LANDFILL
CLEAR LAKE, CALIFORNIA

Length of Road	5600.0	feet
One pound	453.6	grams
One ton	2000.0	pounds

Emission Factors [1]

Equipment	Category	Model Year	Speed	Fuel	ROG_RUNEX (grams/mile)	TOG_RUNEX (grams/mile)	CO_RUNEX (grams/mile)	NOx_RUNEX (grams/mile)	SOx_RUNEX (grams/mile)	CO2_RUNEX (grams/mile)	CH4_RUNEX (grams/mile)	PM10_RUNEX (grams/mile)	PM2_5_RUNEX (grams/mile)	N2O_RUNEX (grams/mile)
Public Self Haul	LDT1	2018	20	GAS	8.11E-03	1.18E-02	6.62E-01	2.70E-02	3.72E-03	3.75E+02	2.72E-03	4.34E-03	3.99E-03	4.44E-03
Commercial Self Haul	LHD2	2018	20	GAS	8.32E-03	1.21E-02	1.47E-01	6.65E-02	1.12E-02	1.13E+03	2.60E-03	2.22E-03	2.04E-03	6.85E-03
Franchise	HHDT	2018	20	DSL	2.53E-02	2.88E-02	4.06E-01	4.61E+00	1.73E-02	1.83E+03	1.18E-03	4.82E-03	4.61E-03	2.88E-01

Daily Emissions

Equipment	Category	Vehicle (Trips/Day)	Vehicle (Miles /Trip)	Vehicle (Miles/Day)	ROG (lbs/day)	TOG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)	N2O (lbs/day)
Public Self Haul	LDT1	126	1.061	133.64	2.39E-03	3.49E-03	1.95E-01	7.95E-03	1.09E-03	1.11E+02	8.02E-04	1.28E-03	1.17E-03	1.31E-03
Commercial Self Haul	LHD2	14	1.061	14.85	2.72E-04	3.98E-04	4.82E-03	2.18E-03	3.67E-04	3.70E+01	8.52E-05	7.28E-05	6.69E-05	2.24E-04
Franchise	HHDT	19	1.061	20.15	1.13E-03	1.28E-03	1.80E-02	2.05E-01	7.69E-04	8.14E+01	5.23E-05	2.14E-04	2.05E-04	1.28E-02

Annual Emissions

Equipment	Category	Vehicle (Trips/Year)	Vehicle (Miles/Trip)	Vehicle (Miles/Year)	ROG (tons/year)	TOG (tons/year)	CO (tons/year)	NOx (tons/year)	SOx (tons/year)	CO2 (tons/year)	CH4 (tons/year)	PM10 (tons/year)	PM2.5 (tons/year)	N2O (tons/year)
Public Self Haul	LDT1	44440	1.061	47133.33	4.21E-04	6.15E-04	3.44E-02	1.40E-03	1.93E-04	1.95E+01	1.41E-04	2.25E-04	2.07E-04	2.31E-04
Commercial Self Haul	LHD2	4800	1.061	5090.91	4.67E-05	6.82E-05	8.26E-04	3.73E-04	6.28E-05	6.35E+00	1.46E-05	1.25E-05	1.15E-05	3.85E-05
Franchise	HHDT	4710	1.061	4995.45	1.39E-04	1.59E-04	2.23E-03	2.54E-02	9.54E-05	1.01E+01	6.48E-06	2.65E-05	2.54E-05	1.59E-03

Emissions Summary

	ROG	TOG	CO	Nox	Sox	CO2	CH4	PM10	PM2.5	N2O
Daily Emissions (lbs)	3.79E-03	5.16E-03	2.18E-01	2.15E-01	2.23E-03	2.29E+02	9.39E-04	1.56E-03	1.45E-03	1.43E-02
Annual Emissions (tons)	6.07E-04	8.42E-04	3.74E-02	2.72E-02	3.51E-04	3.60E+01	1.62E-04	2.64E-04	2.44E-04	1.86E-03

[1] EMFAC 2017: https://ww2.arb.ca.gov/our-work/programs/mobile-source-emissions-inventory/road-documentation/msei-modeling-tools-emfac

TABLE 1.3
FUTURE POTENTIAL TO EMIT FUGITIVE DUST EMISSIONS FROM UNPAVED ROADWAYS
EASTLAKE LANDFILL
CLEAR LAKE, CALIFORNIA

Emission Source:
Unpaved Roadways

Vehicle Miles Traveled (VMT)

Type of Vehicle[1]	# of Vehicle trips per day[2]	Length of road (round trip)[2] Feet	Miles	VMT Data (per day)	(per year)
7.5 Ton Diesel Truck	3	2,625	0.5	1.7	597
Self Haul- Commercial (Flat Bed)	19	2,625	0.5	9.4	3,334
Franchise (Packer)	29	2,625	0.5	14.4	3,633
Totals	**51**			**26**	**7,563**

[1] Roll off Bins assumed to hold 40 cubic yards per load, traveling from scale U-turn area to current landfill area.

[2] Trips determined by quotent of total tons per day by vehicle capacity. Length of roads provided by Google Earth estimation. Loose garbage 500lbs per cubic yard. Self Haul Commercial and Franchise daily trips provided by Eastlake Project Description- Waste disposal/Landfill traffic forcasts.

Operations Data *

353 days per year- Diesel Truck & Self Haul Commercial.
252 days per year-Franchise.
12,000 Self haul waste tons per year (2050)
5,100 Comercial waste tons per year (2050)
50,000 Franchise waste tons per year (2050)
* April 12, 2019 Draft "Project Description- Landfill Expansion, Eastlake Sanitary Landfill, Clearlake, C A." Waste tons per year from Appendix A.

Fugitive Dust Control Measures:	Control Efficiency	Source:
Watering Roads as needed:	80%	EPA: *AP-42, Section 13.2.2.2*
Chemical Dust Suppressents:	0%	EPA: *AP-42, Section 13.2.2.3*
Cumulative Total Control:	80%	

Eastlake Project Description- Waste Disposal and Landfill Traffic Forecasts 2024

Commercial Self Haul tons per day	14
Commercial Self Haul trips per day	19
Franchise tons per day	203
Franchise trips per day	29

Mean Vehicle Weight (W)

Vehicle Type	Average Full Weight (tons)	Average Tare Weight (tons) *	Average Weight (tons)	Number of Vehicle Trips/Day	Weight times # of vehicles
7.5 Ton Diesel Truck	17.5	7.5	12.5	3	42
Self Haul- Commercial (Flat Bed)	16.7	16	16.4	19	311
Franchise (Packer)	39.0	32	35.5	29	1,030
TOTAL				**51**	**1,383**
				Average Vehicle Weight (tons)	**26.9**

Notes:
Self Haul- Public Waste haul on unpaved roads by 7.5 ton diesel truck carrying roll up bin when filled to capacity (40 cubic yards).
Self Haul- Commercial (Flat Bed)- http://www.resqmed.com/VC4-Tm-info.htm (weight). SCS Project Description- Landfill Expansion, Appendix A (Load).
Franchise (Packer)- https://www.reference.com/vehicles/much-garbage-truck-weigh-17dc33699c400aab (weight). SCS Project Description- Landfill Expansion, Appendix A (Load).

Emissions Calculation Methodology (AP-42, Section 13.2.2 for Unpaved Roads):

$$E_{ext} = [k * (s/12)^a * (W/3)^b] * [(365 - p)/365]$$

Where:

E_{ext} = Annual size-specific emission factor extrapolated for natural mitigation (lb/VMT)
k = Empirical constant [lb/VMT]
a, b = Empirical constant [unitless]
s = Surface material silt content [%]
W = Vehicle weight [tons]
p = Number of days per year with >0.01 inch of rainfall (AP-42, Figure 13.2.2-1 or climate website)

Variables:

k factor for $PM_{2.5}$ =	0.15	lb/VMT	(from AP-42, Table 13.2.2-2.)
k factor for PM_{10} =	1.5	lb/VMT	(from AP-42, Table 13.2.2-2.)
Fleet Average Vehicle Weight (W)	26.91	tons	
Mean Silt content (s)	6.4	%	(from AP-42, Table 13.2.2-1)
# of days w/ >0.01 in. rainfall (p)	75	days/year	(from AP-42, Figure 13.2.1-2)
a (constant) =	0.9		(from AP-42, Table 13.2.2-2.)
b (constant) =	0.45		(from AP-42, Table 13.2.2-2.)

E_{ext}	=	0.18	lb/VMT	($PM_{2.5}$)
		1.82	lb/VMT	(PM_{10})

SUMMARY OF PARTICULATE EMISSIONS FROM UNPAVED ROADWAYS

Pollutant	Total VMT VMT/day	VMT/yr	Emission Factor	Control Efficiency (%)	Potential to Emit lbs/day	tons/yr
$PM_{2.5}$	25.6	7,563	0.18	80%	0.93	0.14
PM_{10}	25.6	7,563	1.82	80%	9.28	1.37

TABLE 1.4
CURRENT POTENTIAL TO EMIT FUGITIVE DUST EMISSIONS FROM UNPAVED ROADWAYS
EASTLAKE LANDFILL
CLEAR LAKE, CALIFORNIA

Emission Source:
Unpaved Roadways

Vehicle Miles Traveled (VMT)

Type of Vehicle[1]	# of Vehicle trips per day[2]	Length of road (round trip)[2]		VMT Data	
		Feet	Miles	(per day)	(per year)
7.5 Ton Diesel Truck	3	2,625	0.5	1.7	597
Self Haul- Commercial (Flat Bed)	14	2,625	0.5	7.0	2,457
Franchise (Packer)	19	2,625	0.5	9.4	2,380
Totals	**36**			**18**	**5,433**

[1]Roll off Bins assumed to hold 40 cubic yards per load, traveling from scale U-turn area to current landfill area.
[2] Trips determined by quotent of total tons per day by vehicle capacity. Length of roads provided by Google Earth estimation. Loose garbage 500lbs per cubic yard. Self Haul Commercial and Franchise daily trips provided by Eastlake Project Description- Waste disposal/Landfill traffic forcasts.

Operations Data *
353 days per year- Diesel Truck & Self Haul Commercial.
252 days per year-Franchise.
12,000 Self haul waste tons per year (2024)
3,600 Comercial waste tons per year (2024)
33,000 Franchise waste tons per year (2024)
* April 12, 2019 Draft "Project Description- Landfill Expansion, Eastlake Sanitary Landfill, Clearlake, C A." Waste tons per year from Appendix A.

Fugitive Dust Control Measures:	Control Efficiency	Source:
Watering Roads as needed:	80%	EPA: *AP-42, Section 13.2.2.2*
Chemical Dust Suppressents:	0%	EPA: *AP-42, Section 13.2.2.3*
Cumulative Total Control:	80%	

Eastlake Project Description- Waste Disposal and Landfill Traffic Forecasts 2024

Commercial Self Haul tons per day	10
Commercial Self Haul trips per day	14
Franchise tons per day	132
Franchise trips per day	19

Mean Vehicle Weight (W)

Vehicle Type	Average Full Weight (tons)	Average Tare Weight (tons) *	Average Weight (tons)	Number of Vehicle Trips/Day	Weight times # of vehicles
7.5 Ton Diesel Truck	17.5	7.5	12.5	3	42
Self Haul- Commercial (Flat Bed)	16.7	16	16.4	14	229
Franchise (Packer)	38.9	32	35.5	19	674
TOTAL				**36**	**945**
				Average Vehicle Weight (tons)	**26.0**

Self Haul- Public Waste haul on unpaved roads by 7.5 tons diesel truck carrying roll up bin when filled to capacity (40 cubic yards).
Self Haul- Commercial (Flat Bed)- http://www.resqmed.com/VC4-Tm-info.htm (weight). SCS Project Description- Landfill Expansion, Appendix A (Load).
Franchise (Packer)- https://www.reference.com/vehicles/much-garbage-truck-weigh-17dc33699c400aab (weight). SCS Project Description- Landfill Expansion, Appendix A (Load).

Emissions Calculation Methodology (AP-42, Section 13.2.2 for Unpaved Roads):

$$E_{ext} = [k * (s/12)^a * (W/3)^b] * [(365 - p)/365]$$

Where:

E_{ext} = Annual size-specific emission factor extrapolated for natural mitigation (lb/VMT)
k = Empirical constant [lb/VMT]
a, b = Empirical constant [unitless]
s = Surface material silt content [%]
W = Vehicle weight [tons]
p = Number of days per year with >0.01 inch of rainfall (AP-42, Figure 13.2.2-1 or climate website)

Variables:

k factor for $PM_{2.5}$ =	0.15	lb/VMT	(from AP-42, Table 13.2.2-2.)
k factor for PM_{10} =	1.5	lb/VMT	(from AP-42, Table 13.2.2-2.)
Fleet Average Vehicle Weight (W)	25.98	tons	
Mean Silt content (s)	6.4	%	(from AP-42, Table 13.2.2-1)
# of days w/ >0.01 in. rainfall (p)	75	days/year	(from AP-42, Figure 13.2.1-2)
a (constant) =	0.9		(from AP-42, Table 13.2.2-2.)
b (constant) =	0.45		(from AP-42, Table 13.2.2-2.)

E_{ext}	=	0.18	lb/VMT	($PM_{2.5}$)
		1.79	lb/VMT	(PM_{10})

SUMMARY OF PARTICULATE EMISSIONS FROM UNPAVED ROADWAYS

Pollutant	Total VMT		Emission Factor	Control Efficiency (%)	Potential to Emit	
	VMT/day	VMT/yr			lbs/day	tons/yr
$PM_{2.5}$	18.1	5,433	0.18	80%	0.65	0.10
PM_{10}	18.1	5,433	1.79	80%	6.47	0.97

TABLE 1.5
FUTURE POTENTIAL TO EMIT FUGITIVE DUST EMISSIONS FROM PAVED ROADWAYS
EASTLAKE LANDFILL
CLEAR LAKE, CALIFORNIA

Emission Source:
Paved Roadways

Vehicle Miles Traveled (VMT)

Type of Vehicle[1]	# of Vehicles per day[2]	Length of road (round trip)[2]		VMT Data	
		Feet	Miles	(per day)	(per year)
Self Haul- Public (Pick Up)	126	5,577	1.1	133.1	46,983
Self Haul- Commercial (Flat Bed)	19	5,577	1.1	20.1	7,085
Franchise (Packer)	29	5,577	1.1	30.6	7,720
Totals	**174**			**184**	**61,788**

[1] April 12, 2019 Draft "Project Description- Landfill Expansion, Eastlake Sanitary Landfill, Clearlake, C A." Waste tons per year from Appendix A.
[2] Vehicle usage data and length of roads provided by April 12, 2019 Draft "Project Description- Landfill Expansion, Eastlake Sanitary Landfill, Clearlake, C A." Waste tons per year from Appendix A (2050).

Operations Data

353	days per year- Diesel Truck & Self Haul Commercial.
252	days per year-Franchise.

* April 12, 2019 Draft "Project Description- Landfill Expansion, Eastlake Sanitary Landfill, Clearlake, C A."

Fugitive Dust Control Measures:	**Control Efficiency**	**Source:**
Watering Roads as needed:	80%	
Street Sweeping as needed:	71%	EPA: Fugitive Dust Background Document and Technical Information Document for BACM, Sept.1992
Cumulative Total Control:	94%	

Mean Vehicle Weight (W)

Vehicle Type	Average Full Weight (tons)	Average Tare Weight (tons)	Average Weight (tons)	Average Number of Vehicles/Day	Weight times # of vehicles
Self Haul- Public (Pick Up)	0.27	3	1.634920635	133	218
Self Haul- Commercial (Flat Bed)	0.53	16	8.263157895	20	166
Franchise (Packer)	4.55	32	18.27586207	31	560
TOTAL				**184**	**943**
				Average Vehicle Weight (tons)	**5.13**

Self Haul- Public (Pick Up)- https://www3.epa.gov/ttn/chief/old/ap42/ch13/s022/references/ref07_c13s0202_1995.pdf (weight). SCS Project Description- Landfill
Self Haul- Commercial (Flat Bed)- http://www.resqmed.com/VC4-Tm-info.htm (weight). SCS Project Description- Landfill Expansion, Appendix A (Load).
Franchise (Packer)- https://www.reference.com/vehicles/much-garbage-truck-weigh-17dc33699c400aab (weight). SCS Project Description- Landfill Expansion, Appendix A (Load).

Emissions Calculation Methodology (AP-42, Section 13.2.1 for Paved Roads):

Calculation of emission factor for fugitive emissions for refuse vehicles on paved haul roads - Use Equation (2) in AP-42 Section 13.2.1, p. 13.2.1-6.

$$E = [k(sL)^{0.91} * (W)^{1.2}](1-P/4N)$$

Where:

E	=	Emission factor in pounds per vehicle mile traveled (lb/VMT)
k	=	Particle size multiplier (dimensionless)
sL	=	Road surface silt loading factor (grams per m^2)
W	=	Vehicle weight in tons
P	=	Number of days with >0.01 in. rainfall
N	=	Number of days in averaging period for P estimate

Variables:

k	=	k factor =	0.00054	lb/VMT, $PM_{2.5}$ (AP-42 Table 13.2-1.1)	
			0.0022	lb/VMT, PM_{10} (AP-42 Table 13.2-1.1)	
sL	=	Silt loading factor =	7.4	g/m^2 (AP-42 Table 13.2.1-3)	
W	=	Mean vehicle weight =	5.13	tons (fleet average)	
P	=	Number of days with >0.01" rain =	75	days/year	(from AP-42, Figure 13.2.1-2; consistent with 2012 EIR)
N	=	Number of days in period =	365	days	

E =	0.02	lb/VMT	($PM_{2.5}$)
	0.09	lb/VMT	(PM_{10})

SUMMARY OF PARTICULATE EMISSIONS FROM PAVED ROADWAYS

Pollutant	Total VMT		Emission Factor (lb/VMT)	Control Efficiency (%)	Potential to Emit	
	VMT/day	VMT/yr			lbs/day	tons/yr
$PM_{2.5}$	184	61,788	0.02	94%	0.24	0.04
PM_{10}	184	61,788	0.09	94%	0.98	0.16

TABLE 1.6
CURRENT POTENTIAL TO EMIT FUGITIVE DUST EMISSIONS FROM PAVED ROADWAYS
EASTLAKE LANDFILL
CLEAR LAKE, CALIFORNIA

Emission Source:
Paved Roadways

Vehicle Miles Traveled (VMT)

Type of Vehicle[1]	# of Vehicles per day[2]	Length of road (round trip)[2]		VMT Data	
		Feet	Miles	(per day)	(per year)
Self Haul- Public (Pick Up)	126	5,577	1.1	133.1	46,983
Self Haul- Commercial (Flat Bed)	14	5,577	1.1	14.8	5,220
Franchise (Packer)	19	5,577	1.1	20.1	5,058
Totals	**159**			**168**	**57,262**

[1] April 12, 2019 Draft "Project Description- Landfill Expansion, Eastlake Sanitary Landfill, Clearlake, C A." Waste tons per year from Appendix A.

[2] Vehicle usage data and length of roads provided by April 12, 2019 Draft "Project Description- Landfill Expansion, Eastlake Sanitary Landfill, Clearlake, C A." Waste tons per year from Appendix A (2024).

Operations Data

353	days per year- Diesel Truck & Self Haul Commercial.
252	days per year-Franchise.

* April 12, 2019 Draft "Project Description- Landfill Expansion, Eastlake Sanitary Landfill, Clearlake, C A."

Fugitive Dust Control Measures:	**Control Efficiency**	**Source:**
Watering Roads as needed:	80%	
Street Sweeping as needed:	71%	EPA: Fugitive Dust Background Document and Technical Information Document for BACM, Sept.1992
Cumulative Total Control:	94%	

Mean Vehicle Weight (W)

Vehicle Type	Average Full Weight (tons)	Average Tare Weight (tons)	Average Weight (tons)	Average Number of Vehicles/Day	Weight times # of vehicles
Self Haul- Public (Pick Up)	0.27	3	1.634920635	133	218
Self Haul- Commercial (Flat Bed)	0.71	16	8.357142857	15	124
Franchise (Packer)	6.95	32	19.47368421	20	391
TOTAL				**168**	**732**
				Average Vehicle Weight (tons)	**4.36**

Self Haul- Public (Pick Up)- https://www3.epa.gov/ttn/chief/old/ap42/ch13/s022/references/ref07_c13s0202_1995.pdf (weight). SCS Project Description- Landfill Expansion, Appendix A (Load)
Self Haul- Commercial (Flat Bed)- http://www.resqmed.com/VC4-Tm-info.htm (weight). SCS Project Description- Landfill Expansion, Appendix A (Load).
Franchise (Packer)- https://www.reference.com/vehicles/much-garbage-truck-weigh-17dc33699c400aab (weight). SCS Project Description- Landfill Expansion, Appendix A (Load).

Emissions Calculation Methodology (AP-42, Section 13.2.1 for Paved Roads):

Calculation of emission factor for fugitive emissions for refuse vehicles on paved haul roads - Use Equation (2) in AP-42 Section 13.2.1, p. 13.2.1-6.

$$E = [k(sL)^{0.91} * (W)^{1.2}](1-P/4N)$$

Where:

E	=	Emission factor in pounds per vehicle mile traveled (lb/VMT)
k	=	Particle size multiplier (dimensionless)
sL	=	Road surface silt loading factor (grams per m^2)
W	=	Vehicle weight in tons
P	=	Number of days with >0.01 in. rainfall
N	=	Number of days in averaging period for P estimate

Variables:

k	= k factor =	0.00054	lb/VMT, $PM_{2.5}$ (AP-42 Table 13.2-1.1)	
		0.0022	lb/VMT, PM_{10} (AP-42 Table 13.2-1.1)	
sL	= Silt loading factor =	7.4	g/m^2 (AP-42 Table 13.2.1-3)	
W	= Mean vehicle weight =	4.36	tons (fleet average)	
P	= Number of days with >0.01" rain =	75	days/year	(from AP-42, Figure 13.2.1-2; consistent with 2012 EIR)
N	= Number of days in period =	365	days	

E =	0.02	lb/VMT	($PM_{2.5}$)
	0.08	lb/VMT	(PM_{10})

SUMMARY OF PARTICULATE EMISSIONS FROM PAVED ROADWAYS

Pollutant	Total VMT		Emission Factor (lb/VMT)	Control Efficiency (%)	Potential to Emit	
	VMT/day	VMT/yr			lbs/day	tons/yr
$PM_{2.5}$	168	57,262	0.02	94%	0.18	0.03
PM_{10}	168	57,262	0.08	94%	0.74	0.13

TABLE 1.7
POTENTIAL TO EMIT ESTIMATES FOR FUTURE LANDFILL GAS FLARE
EASTLAKE LANDFILL
CLEAR LAKE, CALIFORNIA

CAS Number	Compounds	Molecular Weight (g/Mol)	Ave. Concentration of Compounds Found In LFG (ppmv)[b]	Pollutant Flow Rate to Flare (tons/yr)	Flare Destruction Efficiency (%) [d]	Maximum Emissions from Flare (lbs/hr)	Maximum Emissions from Flare (lbs/day)	Maximum Emissions from Flare (lbs/yr)	Maximum Emissions from Flare (tons/yr)
Hazardous Air Pollutants (HAPs)[a]									
71-55-6	1,1,1-Trichloroethane (methyl chloroform)	133.41	0.168	1.49E-02	98.0%	6.81E-05	1.63E-03	5.97E-01	2.98E-04
79-34-5	1,1,2,2-Tetrachloroethane	167.85	0.070	7.82E-03	98.0%	3.57E-05	8.57E-04	3.13E-01	1.56E-04
75-34-3	1,1-Dichloroethane (ethylidene dichloride)	98.97	0.741	4.88E-02	98.0%	2.23E-04	5.35E-03	1.95E+ 00	9.76E-04
75-35-4	1,1-Dichloroethene (vinylidene chloride)	96.94	0.092	5.93E-03	98.0%	2.71E-05	6.50E-04	2.37E-01	1.19E-04
107-06-2	1,2-Dichloroethane (ethylene dichloride)	98.96	0.120	7.90E-03	98.0%	3.61E-05	8.66E-04	3.16E-01	1.58E-04
78-87-5	1,2-Dichloropropane (propylene dichloride)	112.99	0.023	1.73E-03	98.0%	7.90E-06	1.90E-04	6.92E-02	3.46E-05
67-63-0	2-Propanol (isopropyl alcohol)	60.11	7.908	3.16E-01	99.7%	2.17E-04	5.20E-03	1.90E+ 00	9.49E-04
107-13-1	Acrylonitrile	53.06	0.036	1.27E-03	99.7%	8.71E-07	2.09E-05	7.63E-03	3.81E-06
75-25-2	Bromodichloromethane	163.83	0.311	3.39E-02	98.0%	1.55E-04	3.72E-03	1.36E+ 00	6.78E-04
71-43-2	Benzene	78.11	0.972	5.05E-02	99.7%	3.46E-05	8.30E-04	3.03E-01	1.52E-04
75-15-0	Carbon disulfide	76.13	0.320	1.62E-02	99.7%	1.11E-05	2.66E-04	9.73E-02	4.86E-05
56-23-5	Carbon tetrachloride	153.84	0.007	7.17E-04	98.0%	3.27E-06	7.85E-05	2.87E-02	1.43E-05
46-358-1	Carbonyl sulfide	60.07	0.183	7.31E-03	99.7%	5.01E-06	1.20E-04	4.39E-02	2.19E-05
108-90-7	Chlorobenzene	112.56	0.227	1.70E-02	98.0%	7.76E-05	1.86E-03	6.80E-01	3.40E-04
75-45-6	Chlorodifluoromethane	86.47	0.355	2.04E-02	98.0%	9.33E-05	2.24E-03	8.17E-01	4.09E-04
75-00-3	Chloroethane (ethyl chloride)	64.52	0.239	1.03E-02	98.0%	4.69E-05	1.12E-03	4.10E-01	2.05E-04
67-66-3	Chloroform	119.39	0.021	1.67E-03	98.0%	7.62E-06	1.83E-04	6.67E-02	3.34E-05
74-87-3	Chloromethane (methyl chloride)	50.49	0.249	8.37E-03	98.0%	3.82E-05	9.17E-04	3.35E-01	1.67E-04
106-46-7	Dichlorobenzene (1,4-Dichlorobenzene)	147.00	1.607	1.57E-01	98.0%	7.18E-04	1.72E-02	6.29E+ 00	3.14E-03
75-43-4	Dichlorodifluoromethane	120.91	1.751	1.41E-01	98.0%	6.43E-04	1.54E-02	5.64E+ 00	2.82E-03
75-71-8	Dichlorofluoromethane	102.92	2.620	1.79E-01	98.0%	8.19E-04	1.97E-02	7.18E+ 00	3.59E-03
75-09-2	Dichloromethane (methylene chloride)	84.94	3.395	1.92E-01	98.0%	8.76E-04	2.10E-02	7.68E+ 00	3.84E-03
64-17-5	Ethanol	46.08	118.618	3.64E+ 00	99.7%	2.49E-03	5.98E-02	2.18E+ 01	1.09E-02
100-41-4	Ethylbenzene	106.16	6.789	4.80E-01	99.7%	3.28E-04	7.88E-03	2.88E+ 00	1.44E-03
106-93-4	Ethylene dibromide (1,2-Dibromoethane)	187.88	0.046	5.75E-03	98.0%	2.63E-05	6.30E-04	2.30E-01	1.15E-04
75-69-4	Fluorotrichloromethane	137.40	0.327	2.99E-02	98.0%	1.37E-04	3.28E-03	1.20E+ 00	5.98E-04
110-54-3	Hexane	86.18	2.324	1.33E-01	99.7%	9.13E-05	2.19E-03	8.00E-01	4.00E-04
2148-87-8	Hydrogen Sulfide	34.08	150.000	3.40E+ 00	99.7%	2.33E-03	5.59E-02	2.04E+ 01	1.02E-02
7439-97-6	Mercury (total)(e)	200.61	0.00029	3.90E-05	--	8.90E-06	2.14E-04	7.80E-02	3.90E-05
78-93-3	Methyl ethyl ketone	72.11	10.557	5.07E-01	99.7%	3.47E-04	8.33E-03	3.04E+ 00	1.52E-03
108-10-1	Methyl isobutyl ketone	100.16	0.750	5.00E-02	99.7%	3.42E-05	8.22E-04	3.00E-01	1.50E-04
127-18-4	Perchloroethylene (tetrachloroethylene)	165.83	1.193	1.32E-01	98.0%	6.01E-04	1.44E-02	5.27E+ 00	2.63E-03
79-01-6	Trichloroethylene (trichloroethene)	131.40	0.681	5.95E-02	98.0%	2.72E-04	6.53E-03	2.38E+ 00	1.19E-03
75-01-4	Vinyl chloride	62.50	1.077	4.48E-02	98.0%	2.05E-04	4.91E-03	1.79E+ 00	8.96E-04
7647-01-0	Hydrochloric acid (f)	36.50	42.000	1.02E+ 00	--	2.35E-01	5.64E+ 00	2.06E+ 03	1.03E+00
108-88-3	Toluene	92.13	25.405	1.56E+ 00	99.7%	1.07E-03	2.56E-02	9.34E+ 00	4.67E-03
1330-20-7	Xylenes	106.16	16.582	1.17E+ 00	99.7%	8.02E-04	1.93E-02	7.03E+ 00	3.51E-03
Totals: HAPs						**0.25**	**5.95**	**2171.93**	**1.09**

CAS Number	Compounds	Emission Factor (lb/mmscf)(g)	Maximum Emissions from Flare (lbs/hr)	Maximum Emissions from Flare (lbs/day)	Maximum Emissions from Flare (lbs/yr)	Maximum Emissions from Flare (tons/yr)
	PAHs (without Naphthalene)	4.09E-05	2.39E-06	5.74E-05	0.02	1.05E-05
91-20-3	Naphthalene	1.01E-05	5.90E-10	1.42E-08	0.01	2.59E-06
50-00-0	Formaldehyde	0.016	9.36E-04	2.25E-02	8.20	4.10E-03
Totals: HAPs				**2.25E-02**	**8.23**	**4.11E-03**

Criteria Air Pollutants	Molecular weight	Outlet Concentration of Compound (ppmv)	Emission Factor (lb/MMft^3)	Maximum Emissions from Flare (lbs/hr)	Maximum Emissions from Flare (lbs/day)	Maximum Emissions from Flare (lbs/yr)	Pollutant Flow Rate from Flare (tons/yr) (i)
Total Non-Methane Organics (NMOCs) as Hexane @3% O_2	86.18	20.00	--	1.14	27.40	10,002.71	5.00
VOCs (h)	86.18	20.00	--	1.14	27.40	10,002.71	5.00

Criteria Air Pollutants	Molecular Weight (g/Mol)	Rep. Concentration of Compound (ppmv)	Emission Factor (lb/MMft^3)	Emission Factor (lb/MMBtu)	Maximum Emissions from Flare (lbs/hr)	Maximum Emissions from Flare (lbs/day)	Maximum Emissions from Flare (tons/yr)
Nitrogen Oxides (NO_X)	--	--	--	0.05	1.46	35.10	6.41
Carbon Monoxide (CO)	--	--	--	0.20	5.85	140.39	25.62
Sulfur Dioxide (SO_2)	64.10	150.00	--	--	1.46	35.06	6.40
Particulate Matter (PM_{10})/PM/$PM_{2.5}$	--	--	17.00	--	0.50	11.93	2.18

Notes:

(a) List of hazardous air pollutants was from Title III Clean Air Act Amendments, 1990, and include compounds found in landfill gas, as determined from a list in AP-42 Tables 2.4-1 ("Default Concentrations for Landfill Gas Constituents, 11/98").

(b) Average concentration of HAPs found in LFG were obtained from "Waste Industry Air Coalition Comparison of Recent Landfill Gas Analyses with Historic AP-42 Values" as site-specific analysis not available.

(c) Pollutant flow rate based on maximum flow rate provided in Lake County AQMD Authority to Construct (A/C 2013-2014), Name and Equipment Description.

(d) Values obtained from AP-42 Table 2.4-3 ("Control Efficiencies for LFG Consituents")

(e) Concentration of Mercury based on EPA AP-42 Section 2.4 Table 2.4-1 (11/98).

(f) Concentration of HCl is based on AP-42 default, 2.4.4.2, (11/98).

(g) Site-specific information for conventional flare not available, therefore LANGEM default concentrations applied. Mid-Valley Sanitary Landfill in SCAQMD on November 8, 2012 for PAHs and June 19, 2013 for formaldehyde.

(h) VOCs assumed to equal NMOCs.

(i) Based on outlet concentration of 20 ppmv as hexane (BACT/NSPS) and an estimated maximum exhaust rate of 7,849 SCFM @ 3% oxygen.

(j) Max LFG exhaust rate from flare is an estimate that is scaled from specifications for West Miramar's 2,800 scfm flare. Assumed 3% exhaust oxygen.

Variables:

MODEL INPUT VARIABLES:		
Methane Content	50%	%
Max LFG Collection Rate to Flare (c)	975	SCFM
Max LFG Exhaust Rate from Flare (j)	4,251	SCFM
Flare Rating	29.2	MMBtu/hr

Criteria pollutant emission factors used for flare:

Pollutant	Emission Factor	Data Source
NMOCs/VOCs	20 ppmv outlet @3% O2 as hexane	BACT
CO	0.2 lb/MMBtu	BACT
SO_2	150 ppmv	Maximum Expected/BACT
NO_x	0.05 lb/MMBtu	BACT
$PM_{10}/PM_{2.5}$	17 lb/MMft3 as methane	BACT/AP-42 Table 2.4-5

CONVERSIONS

ton conversion	2000	lbs
lb conversion	453.6	g
hour conversion	60	min
day conversion	24	hrs
12 months	365	days
mol conversion	24.04	L @ STP
cf conversion	28.32	L
mmbtu conversion	1,000,000	btu

EXAMPLE CALCULATIONS

(HAPS)

Total Pollutant Flow Rate (To Flare)= ((Molecular Weight of Compound[g/mol])* (Concentration of Compound[ppm]/1,000,000)* (Total LFG to Flare [cfm]) * (60min* 24hr* 365 days)* (1ton/2000 lb)* (1lb/453.6g)* (1mol/24.04L @ STP)* (28.32L/1cf)

Pollutant Flow rate to Flare = (Total pollutant flow rate [tons/yr])* (Collection efficiency)

Pollutant Emissions through landfill = (Total pollutant flow rate [tons/yr]) * (1 - collection efficiency)

Emission = Rate * Emission Factor;

(NMOCs/VOCs)

Maximum Flare flow rate = (Molecular Weight of Compound[g/mol])*(Concentration of Compound[ppm]/1,000,000)*(LFG Flow from flare [cfm]) *(60min*24hr*365days)*(1ton/2000lb)*(1lb/453.6g)*(1mol/24.04L @ STP)*(28.32L/1cf)

TABLE 1.8
POTENTIAL TO EMIT ESTIMATES FOR EXISTING LANDFILL GAS FLARE
EASTLAKE LANDFILL
CLEAR LAKE, CALIFORNIA

CAS Number	Compounds	Molecular Weight (g/Mol)	Ave. Concentration of Compounds Found In LFG (ppmv)[(b)]	Pollutant Flow Rate to Flare (tons/yr)	Flare Destruction Efficiency (%) [(d)]	Maximum Emissions from Flare (lbs/hr)	Maximum Emissions from Flare (lbs/day)	Maximum Emissions from Flare (lbs/yr)	Maximum Emissions from Flare (tons/yr)
Hazardous Air Pollutants (HAPs)[(a)]									
71-55-6	1,1,1-Trichloroethane (methyl chloroform)	133.41	0.168	6.88E-03	98.0%	3.14E-05	7.54E-04	2.75E-01	1.38E-04
79-34-5	1,1,2,2-Tetrachloroethane	167.85	0.070	3.61E-03	98.0%	1.65E-05	3.95E-04	1.44E-01	7.22E-05
75-34-3	1,1-Dichloroethane (ethylidene dichloride)	98.97	0.741	2.25E-02	98.0%	1.03E-04	2.47E-03	9.01E-01	4.50E-04
75-35-4	1,1-Dichloroethene (vinylidene chloride)	96.94	0.092	2.74E-03	98.0%	1.25E-05	3.00E-04	1.10E-01	5.48E-05
107-06-2	1,2-Dichloroethane (ethylene dichloride)	98.96	0.120	3.65E-03	98.0%	1.67E-05	4.00E-04	1.46E-01	7.29E-05
78-87-5	1,2-Dichloropropane (propylene dichloride)	112.99	0.023	7.98E-04	98.0%	3.64E-06	8.75E-05	3.19E-02	1.60E-05
67-63-0	2-Propanol (isopropyl alcohol)	60.11	7.908	1.46E-01	99.7%	1.00E-04	2.40E-03	8.76E-01	4.38E-04
107-13-1	Acrylonitrile	53.06	0.036	5.87E-04	99.7%	4.02E-07	9.64E-06	3.52E-03	1.76E-06
75-25-2	Bromodichloromethane	163.83	0.311	1.56E-02	98.0%	7.15E-05	1.71E-03	6.26E-01	3.13E-04
71-43-2	Benzene	78.11	0.972	2.33E-02	99.7%	1.60E-05	3.83E-04	1.40E-01	7.00E-05
75-15-0	Carbon disulfide	76.13	0.320	7.48E-03	99.7%	5.12E-06	1.23E-04	4.49E-02	2.24E-05
56-23-5	Carbon tetrachloride	153.84	0.007	3.31E-04	98.0%	1.51E-06	3.62E-05	1.32E-02	6.61E-06
46-358-1	Carbonyl sulfide	60.07	0.183	3.38E-03	99.7%	2.31E-06	5.55E-05	2.03E-02	1.01E-05
108-90-7	Chlorobenzene	112.56	0.227	7.85E-03	98.0%	3.58E-05	8.60E-04	3.14E-01	1.57E-04
75-45-6	Chlorodifluoromethane	86.47	0.355	9.43E-03	98.0%	4.31E-05	1.03E-03	3.77E-01	1.89E-04
75-00-3	Chloroethane (ethyl chloride)	64.52	0.239	4.74E-03	98.0%	2.16E-05	5.19E-04	1.89E-01	9.47E-05
67-66-3	Chloroform	119.39	0.021	7.70E-04	98.0%	3.52E-06	8.44E-05	3.08E-02	1.54E-05
74-87-3	Chloromethane (methyl chloride)	50.49	0.249	3.86E-03	98.0%	1.76E-05	4.23E-04	1.54E-01	7.72E-05
106-46-7	Dichlorobenzene (1,4-Dichlorobenzene)	147.00	1.607	7.26E-02	98.0%	3.31E-04	7.95E-03	2.90E+ 00	1.45E-03
75-43-4	Dichlorodifluoromethane	120.91	1.751	6.50E-02	98.0%	2.97E-04	7.13E-03	2.60E+ 00	1.30E-03
75-71-8	Dichlorofluoromethane	102.92	2.620	8.28E-02	98.0%	3.78E-04	9.08E-03	3.31E+ 00	1.66E-03
75-09-2	Dichloromethane (methylene chloride)	84.94	3.395	8.86E-02	98.0%	4.04E-04	9.71E-03	3.54E+ 00	1.77E-03
64-17-5	Ethanol	46.08	118.618	1.68E+ 00	99.7%	1.15E-03	2.76E-02	1.01E+ 01	5.04E-03
100-41-4	Ethylbenzene	106.16	6.789	2.21E-01	99.7%	1.52E-04	3.64E-03	1.33E+ 00	6.64E-04
106-93-4	Ethylene dibromide (1,2-Dibromoethane)	187.88	0.046	2.65E-03	98.0%	1.21E-05	2.91E-04	1.06E-01	5.31E-05
75-69-4	Fluorotrichloromethane	137.40	0.327	1.38E-02	98.0%	6.30E-05	1.51E-03	5.52E-01	2.76E-04
110-54-3	Hexane	86.18	2.324	6.15E-02	99.7%	4.21E-05	1.01E-03	3.69E-01	1.85E-04
2148-87-8	Hydrogen Sulfide	34.08	150.000	1.57E+ 00	99.7%	1.08E-03	2.58E-02	9.42E+ 00	4.71E-03
7439-97-6	Mercury (total)(e)	200.61	0.00029	1.80E-05	--	4.11E-06	9.86E-05	3.60E-02	1.80E-05
78-93-3	Methyl ethyl ketone	72.11	10.557	2.34E-01	99.7%	1.60E-04	3.84E-03	1.40E+ 00	7.01E-04
108-10-1	Methyl isobutyl ketone	100.16	0.750	2.31E-02	99.7%	1.58E-05	3.79E-04	1.38E-01	6.92E-05
127-18-4	Perchloroethylene (tetrachloroethylene)	165.83	1.193	6.08E-02	98.0%	2.77E-04	6.66E-03	2.43E+ 00	1.22E-03
79-01-6	Trichloroethylene (trichloroethene)	131.40	0.681	2.75E-02	98.0%	1.25E-04	3.01E-03	1.10E+ 00	5.50E-04
75-01-4	Vinyl chloride	62.50	1.077	2.07E-02	98.0%	9.44E-05	2.27E-03	8.27E-01	4.13E-04
7647-01-0	Hydrochloric acid (f)	36.50	42.000	4.71E-01	--	1.08E-01	2.60E+ 00	9.50E+ 02	4.75E-01
108-88-3	Toluene	92.13	25.405	7.19E-01	99.7%	4.92E-04	1.18E-02	4.31E+ 00	2.16E-03
1330-20-7	Xylenes	106.16	16.582	5.41E-01	99.7%	3.70E-04	8.89E-03	3.24E+ 00	1.62E-03
Totals: HAPs						**0.11**	**2.75**	**1002.48**	**0.50**

CAS Number	Compounds	Emission Factor (lb/mmscf)(g)	Maximum Emissions from Flare (lbs/hr)	Maximum Emissions from Flare (lbs/day)	Maximum Emissions from Flare (lbs/yr)	Maximum Emissions from Flare (tons/yr)
	PAHs (without Naphthalene)	4.09E-05	1.10E-06	2.65E-05	0.01	4.84E-06
91-20-3	Naphthalene	1.01E-05	2.72E-10	6.54E-09	0.00	1.19E-06
50-00-0	Formaldehyde	0.016	4.32E-04	1.04E-02	3.78	1.89E-03
Totals: HAPs				**1.04E-02**	**3.80**	**1.90E-03**

Criteria Air Pollutants	Molecular weight	Outlet Concentration of Compound (ppmv)	Emission Factor (lb/MMft^3)	Maximum Emissions from Flare (lbs/hr)	Maximum Emissions from Flare (lbs/day)	Maximum Emissions from Flare (lbs/yr)	Pollutant Flow Rate from Flare (tons/yr) (i)
Total Non-Methane Organics (NMOCs) as Hexane @3% O_2	86.18	20.00	--	0.53	12.65	4,616.87	2.31
VOCs (h)	86.18	20.00	--	0.53	12.65	4,616.87	2.31

Criteria Air Pollutants	Molecular Weight (g/Mol)	Rep. Concentration of Compound (ppmv)	Emission Factor (lb/MMft^3)	Emission Factor (lb/MMBtu)	Maximum Emissions from Flare (lbs/hr)	Maximum Emissions from Flare (lbs/day)	Maximum Emissions from Flare (tons/yr)
Nitrogen Oxides (NO_X)	--	--	--	0.05	0.68	16.20	2.96
Carbon Monoxide (CO)	--	--	--	0.20	2.70	64.80	11.83
Sulfur Dioxide (SO_2)	64.10	150.00	--	--	0.67	16.18	2.95
Particulate Matter (PM_{10})/PM/$PM_{2.5}$	--	--	17.00	--	0.23	5.51	1.01

Notes:

(a) List of hazardous air pollutants was from Title III Clean Air Act Amendments, 1990, and include compounds found in landfill gas, as determined from a list in AP-42 Tables 2.4-1 ("Default Concentrations for Landfill Gas Constituents, 11/98").

(b) Average concentration of HAPs found in LFG were obtained from "Waste Industry Air Coalition Comparison of Recent Landfill Gas Analyses with Historic AP-42 Values" as site-specific analysis not available.

(c) Pollutant flow rate based on maximum flow rate provided in Lake County AQMD Authority to Construct (A/C 2013-2014), Name and Equipment Description.

(d) Values obtained from AP-42 Table 2.4-3 ("Control Efficiencies for LFG Consituents")

(e) Concentration of Mercury based on EPA AP-42 Section 2.4 Table 2.4-1 (11/98).

(f) Concentration of HCl is based on AP-42 default, 2.4.4.2, (11/98).

(g) Site-specific information for conventional flare not available, therefore LANGEM default concentrations applied. Mid-Valley Sanitary Landfill in SCAQMD on November 8, 2012 for PAHs and June 19, 2013 for formaldehyde.

(h) VOCs assumed to equal NMOCs.

(i) Based on outlet concentration of 20 ppmv as hexane (BACT/NSPS) and an estimated maximum exhaust rate of 7,849 SCFM @ 3% oxygen.

(j) Max LFG exhaust rate from flare is an estimate that is scaled from specifications for West Miramar's 2,800 scfm flare. Assumed 3% exhaust oxygen.

Variables:

MODEL INPUT VARIABLES:		
Methane Content	50%	%
Max LFG Collection Rate to Flare (c)	450	SCFM
Max LFG Exhaust Rate from Flare (j)	1,962	SCFM
Flare Rating	14	MMBtu/hr

Criteria pollutant emission factors used for flare:

Pollutant	Emission Factor	Data Source
NMOCs/VOCs	20 ppmv outlet @3% O2 as hexane	BACT
CO	0.2 lb/MMBtu	ATC
SO_2	150 ppmv	Maximum Expected/BACT
NO_x	0.05 lb/MMBtu	ATC
$PM_{10}/PM_{2.5}$	17 lb/MMft3 as methane	BACT/AP-42 Table 2.4-5

CONVERSIONS

ton conversion	2000	lbs
lb conversion	453.6	g
hour conversion	60	min
day conversion	24	hrs
12 months	365	days
mol conversion	24.04	L @ STP
cf conversion	28.32	L
mmbtu conversion	1,000,000	btu

EXAMPLE CALCULATIONS

(HAPS)

Total Pollutant Flow Rate (To Flare)= ((Molecular Weight of Compound[g/mol])* (Concentration of Compound[ppm]/1,000,000)* (Total LFG to Flare [cfm]) * (60min* 24hr* 365 days)* (1ton/2000 lb)* (1lb/453.6g)* (1mol/24.04L @ STP)* (28.32L/1cf)

Pollutant Flow rate to Flare = (Total pollutant flow rate [tons/yr])* (Collection efficiency)

Pollutant Emissions through landfill = (Total pollutant flow rate [tons/yr]) * (1 - collection efficiency)

Emission = Rate * Emission Factor;

(NMOCs/VOCs)

Maximum Flare flow rate = (Molecular Weight of Compound[g/mol])*(Concentration of Compound[ppm]/1,000,000)*(LFG Flow from flare [cfm]) *(60min*24hr*365days)*(1ton/2000lb)*(1lb/453.6g)*(1mol/24.04L @ STP)*(28.32L/1cf)

TABLE 1.9
POTENTIAL TO EMIT ESTIMATES FOR PROPOSED PERMITTED CAPACITY LANDFILL
EASTLAKE LANDFILL
CLEAR LAKE, CALIFORNIA

CAS NUMBER	COMPOUNDS	Molecular Weight (g/Mol)	Ave. Concentration of Compounds Found In LFG (ppmv)[b]	Total Pollutant Flow Rate (tons/yr)[c]	LFG Collection System Efficiency (%)[d]	Pollutant Flow Rate to Control Device (tons/yr)	Pollutant Emission Rate from Landfill (tons/yr)	Pollutant Emission Rate from Landfill (lbs/yr)	Pollutant Emission Rate from Landfill (lbs/day)
Hazardous Air Pollutants (HAPs)[a]									
71-55-6	1,1,1-Trichloroethane (methyl chloroform)	133.41	0.168	1.75E-02	85.0%	1.49E-02	2.63E-03	5.26E+ 00	1.44E-02
79-34-5	1,1,2,2-Tetrachloroethane	167.85	0.070	9.20E-03	85.0%	7.82E-03	1.38E-03	2.76E+ 00	7.56E-03
75-34-3	1,1-Dichloroethane (ethylidene dichloride)	98.97	0.741	5.74E-02	85.0%	4.88E-02	8.61E-03	1.72E+ 01	4.72E-02
75-35-4	1,1-Dichloroethene (vinylidene chloride)	96.94	0.092	6.98E-03	85.0%	5.93E-03	1.05E-03	2.09E+ 00	5.74E-03
107-06-2	1,2-Dichloroethane (ethylene dichloride)	98.96	0.120	9.30E-03	85.0%	7.90E-03	1.39E-03	2.79E+ 00	7.64E-03
78-87-5	1,2-Dichloropropane (propylene dichloride)	112.99	0.023	2.03E-03	85.0%	1.73E-03	3.05E-04	6.10E-01	1.67E-03
67-63-0	2-Propanol (isopropyl alcohol)	60.11	7.908	3.72E-01	85.0%	3.16E-01	5.58E-02	1.12E+ 02	3.06E-01
107-13-1	Acrylonitrile	53.06	0.036	1.50E-03	85.0%	1.27E-03	2.24E-04	4.49E-01	1.23E-03
75-25-2	Bromodichloromethane	163.83	0.311	3.99E-02	85.0%	3.39E-02	5.98E-03	1.20E+ 01	3.28E-02
71-43-2	Benzene	78.11	0.972	5.94E-02	85.0%	5.05E-02	8.92E-03	1.78E+ 01	4.89E-02
75-15-0	Carbon disulfide	76.13	0.320	1.91E-02	85.0%	1.62E-02	2.86E-03	5.72E+ 00	1.57E-02
56-23-5	Carbon tetrachloride	153.84	0.007	8.43E-04	85.0%	7.17E-04	1.26E-04	2.53E-01	6.93E-04
46-358-1	Carbonyl sulfide	60.07	0.183	8.61E-03	85.0%	7.31E-03	1.29E-03	2.58E+ 00	7.07E-03
108-90-7	Chlorobenzene	112.56	0.227	2.00E-02	85.0%	1.70E-02	3.00E-03	6.00E+ 00	1.64E-02
75-00-3	Chloroethane (ethyl chloride)	64.52	0.239	1.21E-02	85.0%	1.03E-02	1.81E-03	3.62E+ 00	9.92E-03
67-66-3	Chloroform	119.39	0.021	1.96E-03	85.0%	1.67E-03	2.94E-04	5.89E-01	1.61E-03
75-45-6	Chlorodifluoromethane	86.47	0.355	2.40E-02	85.0%	2.04E-02	3.60E-03	7.21E+ 00	1.98E-02
74-87-3	Chloromethane (methyl chloride)	50.49	0.249	9.84E-03	85.0%	8.37E-03	1.48E-03	2.95E+ 00	8.09E-03
106-46-7	Dichlorobenzene (1,4-Dichlorobenzene)	147.00	1.607	1.85E-01	85.0%	1.57E-01	2.77E-02	5.55E+ 01	1.52E-01
75-43-4	Dichlorodifluoromethane	120.91	1.751	1.66E-01	85.0%	1.41E-01	2.49E-02	4.97E+ 01	1.36E-01
75-71-8	Dichlorofluoromethane	102.92	2.620	2.11E-01	85.0%	1.79E-01	3.17E-02	6.33E+ 01	1.74E-01
75-09-2	Dichloromethane (Methylene Chloride)	84.94	3.395	2.26E-01	85.0%	1.92E-01	3.39E-02	6.77E+ 01	1.86E-01
64-17-5	Ethanol	46.08	118.618	4.28E+ 00	85.0%	3.64E+ 00	6.42E-01	1.28E+ 03	3.52E+ 00
100-41-4	Ethylbenzene	106.16	6.789	5.64E-01	85.0%	4.80E-01	8.46E-02	1.69E+ 02	4.64E-01
106-93-4	Ethylene dibromide (1,2-Dibromoethane)	187.88	0.046	6.77E-03	85.0%	5.75E-03	1.01E-03	2.03E+ 00	5.56E-03
75-69-4	Fluorotrichloromethane	137.40	0.327	3.52E-02	85.0%	2.99E-02	5.28E-03	1.06E+ 01	2.89E-02
110-54-3	Hexane	86.18	2.324	1.57E-01	85.0%	1.33E-01	2.35E-02	4.70E+ 01	1.29E-01
2148-87-8	Hydrogen Sulfide	34.08	150.000	4.00E+ 00	85.0%	3.40E+ 00	6.00E-01	1.20E+ 03	3.29E+ 00
7439-97-6	Mercury (total)(e)	200.61	0.000	4.59E-05	85.0%	3.90E-05	6.88E-06	1.38E-02	3.77E-05
78-93-3	Methyl ethyl ketone	72.11	10.557	5.96E-01	85.0%	5.07E-01	8.94E-02	1.79E+ 02	4.90E-01
108-10-1	Methyl isobutyl ketone	100.16	0.750	5.88E-02	85.0%	5.00E-02	8.82E-03	1.76E+ 01	4.83E-02
127-18-4	Perchloroethylene (tetrachloroethylene)	165.83	1.193	1.55E-01	85.0%	1.32E-01	2.32E-02	4.65E+ 01	1.27E-01
108-88-3	Toluene	92.13	25.405	1.83E+ 00	85.0%	1.56E+ 00	2.75E-01	5.50E+ 02	1.51E+ 00
79-01-6	Trichloroethylene (trichloroethene)	131.40	0.681	7.01E-02	85.0%	5.95E-02	1.05E-02	2.10E+ 01	5.76E-02
75-01-4	Vinyl chloride	62.50	1.077	5.27E-02	85.0%	4.48E-02	7.90E-03	1.58E+ 01	4.33E-02
1330-20-7	Xylenes	106.16	16.582	1.38E+ 00	85.0%	1.17E+ 00	2.07E-01	4.13E+ 02	1.13E+ 00
Totals: HAPs				14.646			2.20	4,393.78	12.04
Criteria Air Pollutants									
	Total Non-Methane Organics (NMOCs) as Hexane (f)	86.18	595	40.14	85.0%	34.12	6.02	12,042.57	32.99
	VOCs (g)	86.18	232	15.66	85.0%	13.31	2.35	4,696.60	12.87

Notes:

(a) List of hazardous air pollutants was from Title III Clean Air Act Amendments, 1990, and include compounds found in landfill gas, as determined from a list in AP-42 Tables 2.4-1 ("Default Concentrations for Landfill Gas Constituents, 11/98").

(b) Average concentration of compounds found in LFG based on "Waste Industry Air Coalition Comparison of Recent Landfill Gas Analyses with Historic AP-42 Values"

(c) Total pollutant emission rate based on estimated LFG generation rate.

(d) According to CARB, landfills complying with LMR should expect 85% collection efficiency.

(e) Concentration of Mercury based on EPA AP-42 Section 2.4 Table 2.4-1 (11/98).

(f) NMOC concentration from EPA's AP-42, Section 2.4

(g) VOCs assumed to be 39% NMOCs per EPA AP-42, Section 2.4

(h) LFG generation modeling was performed using the U.S. Environmental Protection Agency (EPA) LandGEM model to estimate the amount of LFG being generated from the entire landfill project until 2050 when landfill is expected to reach future capacity and LFG flow is maximum.

Variables:

MODEL INPUT VARIABLES:		
Methane Concentration (%)	50%	
LFG generation rate (year 2050) (h)	1,147	SCFM
LFG Collection System efficiency (d)	85%	

CONVERSIONS

ton conversion	2000	lbs
lb conversion	453.6	g
hour conversion	60	min
day conversion	24	hrs
12 months	365	days
mol conversion	24.04	L @ STP
cf conversion	28.32	L
mmbtu conversion	1,000,000	btu
metric ton	1.1	English tons

Landgem GHG

CAS NUMBER	GHG Emittant	Gross Emission (TPY)	Controlled Emissions (TPY)
74-82-8	Methane	6265.6	939.84
124-38-9	Carbone Dioxide	17193	2578.95

EXAMPLE CALCULATIONS

(HAPS AND VOCS)

Total Pollutant Flow Rate (To Flare)= ((Molecular Weight of Compound[g/mol])* (Concentration of Compound[ppm]/1,000,000)* (Total LFG to Flare [cfm]) * (60min* 24hr* 365 days)* (1ton/2000 lb)* (1lb/453.6g)* (1mol/24.04L @ STP)* (28.32L/1cf)

Pollutant Flow rate = (Total pollutant flow rate [tons/yr])* (Collection efficiency)

Pollutant Emissions through landfill = (Total pollutant flow rate [tons/yr]) * (1 - collection efficiency)

TABLE 1.10
POTENTIAL TO EMIT ESTIMATES FOR CURRENT PERMITTED CAPACITY LANDFILL (LFG)
EASTLAKE LANDFILL
CLEAR LAKE, CALIFORNIA

CAS NUMBER	COMPOUNDS	Molecular Weight (g/Mol)	Ave. Concentration of Compounds Found In LFG (ppmv)[b]	Total Pollutant Flow Rate (tons/yr)[c]	LFG Collection System Efficiency (%)[d]	Pollutant Flow Rate to Control Device (tons/yr)	Pollutant Emission Rate from Landfill (tons/yr)	Pollutant Emission Rate from Landfill (lbs/yr)	Pollutant Emission Rate from Landfill (lbs/day)
Hazardous Air Pollutants (HAPs)[a]									
71-55-6	1,1,1-Trichloroethane (methyl chloroform)	133.41	0.168	1.39E-02	85.0%	1.18E-02	2.09E-03	4.18E+ 00	1.15E-02
79-34-5	1,1,2,2-Tetrachloroethane	167.85	0.070	7.31E-03	85.0%	6.21E-03	1.10E-03	2.19E+ 00	6.01E-03
75-34-3	1,1-Dichloroethane (ethylidene dichloride)	98.97	0.741	4.56E-02	85.0%	3.88E-02	6.84E-03	1.37E+ 01	3.75E-02
75-35-4	1,1-Dichloroethene (vinylidene chloride)	96.94	0.092	5.55E-03	85.0%	4.71E-03	8.32E-04	1.66E+ 00	4.56E-03
107-06-2	1,2-Dichloroethane (ethylene dichloride)	98.96	0.120	7.39E-03	85.0%	6.28E-03	1.11E-03	2.22E+ 00	6.07E-03
78-87-5	1,2-Dichloropropane (propylene dichloride)	112.99	0.023	1.62E-03	85.0%	1.37E-03	2.42E-04	4.85E-01	1.33E-03
67-63-0	2-Propanol (isopropyl alcohol)	60.11	7.908	2.96E-01	85.0%	2.51E-01	4.43E-02	8.87E+ 01	2.43E-01
107-13-1	Acrylonitrile	53.06	0.036	1.19E-03	85.0%	1.01E-03	1.78E-04	3.56E-01	9.76E-04
75-25-2	Bromodichloromethane	163.83	0.311	3.17E-02	85.0%	2.69E-02	4.75E-03	9.51E+ 00	2.60E-02
71-43-2	Benzene	78.11	0.972	4.72E-02	85.0%	4.01E-02	7.08E-03	1.42E+ 01	3.88E-02
75-15-0	Carbon disulfide	76.13	0.320	1.52E-02	85.0%	1.29E-02	2.27E-03	4.55E+ 00	1.25E-02
56-23-5	Carbon tetrachloride	153.84	0.007	6.70E-04	85.0%	5.69E-04	1.00E-04	2.01E-01	5.50E-04
46-358-1	Carbonyl sulfide	60.07	0.183	6.84E-03	85.0%	5.81E-03	1.03E-03	2.05E+ 00	5.62E-03
108-90-7	Chlorobenzene	112.56	0.227	1.59E-02	85.0%	1.35E-02	2.38E-03	4.77E+ 00	1.31E-02
75-00-3	Chloroethane (ethyl chloride)	64.52	0.239	9.59E-03	85.0%	8.15E-03	1.44E-03	2.88E+ 00	7.88E-03
67-66-3	Chloroform	119.39	0.021	1.56E-03	85.0%	1.33E-03	2.34E-04	4.68E-01	1.28E-03
75-45-6	Chlorodifluoromethane	86.47	0.355	1.91E-02	85.0%	1.62E-02	2.86E-03	5.73E+ 00	1.57E-02
74-87-3	Chloromethane (methyl chloride)	50.49	0.249	7.82E-03	85.0%	6.65E-03	1.17E-03	2.35E+ 00	6.43E-03
106-46-7	Dichlorobenzene (1,4-Dichlorobenzene)	147.00	1.607	1.47E-01	85.0%	1.25E-01	2.20E-02	4.41E+ 01	1.21E-01
75-43-4	Dichlorodifluoromethane	120.91	1.751	1.32E-01	85.0%	1.12E-01	1.97E-02	3.95E+ 01	1.08E-01
75-71-8	Dichlorofluoromethane	102.92	2.620	1.68E-01	85.0%	1.43E-01	2.52E-02	5.03E+ 01	1.38E-01
75-09-2	Dichloromethane (Methylene Chloride)	84.94	3.395	1.79E-01	85.0%	1.52E-01	2.69E-02	5.38E+ 01	1.47E-01
64-17-5	Ethanol	46.08	118.618	3.40E+ 00	85.0%	2.89E+ 00	5.10E-01	1.02E+ 03	2.79E+ 00
100-41-4	Ethylbenzene	106.16	6.789	4.48E-01	85.0%	3.81E-01	6.72E-02	1.34E+ 02	3.68E-01
106-93-4	Ethylene dibromide (1,2-Dibromoethane)	187.88	0.046	5.37E-03	85.0%	4.57E-03	8.06E-04	1.61E+ 00	4.42E-03
75-69-4	Fluorotrichloromethane	137.40	0.327	2.79E-02	85.0%	2.38E-02	4.19E-03	8.38E+ 00	2.30E-02
110-54-3	Hexane	86.18	2.324	1.25E-01	85.0%	1.06E-01	1.87E-02	3.74E+ 01	1.02E-01
2148-87-8	Hydrogen Sulfide	34.08	150.000	3.18E+ 00	85.0%	2.70E+ 00	4.77E-01	9.54E+ 02	2.61E+ 00
7439-97-6	Mercury (total)(e)	200.61	0.0003	3.64E-05	85.0%	3.10E-05	5.46E-06	1.09E-02	2.99E-05
78-93-3	Methyl ethyl ketone	72.11	10.557	4.73E-01	85.0%	4.02E-01	7.10E-02	1.42E+ 02	3.89E-01
108-10-1	Methyl isobutyl ketone	100.16	0.750	4.67E-02	85.0%	3.97E-02	7.01E-03	1.40E+ 01	3.84E-02
127-18-4	Perchloroethylene (tetrachloroethylene)	165.83	1.193	1.23E-01	85.0%	1.05E-01	1.85E-02	3.69E+ 01	1.01E-01
108-88-3	Toluene	92.13	25.405	1.46E+ 00	85.0%	1.24E+ 00	2.18E-01	4.37E+ 02	1.20E+ 00
79-01-6	Trichloroethylene (trichloroethene)	131.40	0.681	5.57E-02	85.0%	4.73E-02	8.35E-03	1.67E+ 01	4.57E-02
75-01-4	Vinyl chloride	62.50	1.077	4.19E-02	85.0%	3.56E-02	6.28E-03	1.26E+ 01	3.44E-02
1330-20-7	Xylenes	106.16	16.582	1.09E+ 00	85.0%	9.31E-01	1.64E-01	3.28E+ 02	9.00E-01
Totals: HAPs				11.635			1.75	3,490.51	9.56
Criteria Air Pollutants									
	Total Non-Methane Organics (NMOCs) as Hexane (f)	86.18	595	31.89	85.0%	27.11	4.78	9,566.86	26.21
	VOCs (g)	86.18	232	12.44	85.0%	10.57	1.87	3,731.08	10.22

Notes:

(a) List of hazardous air pollutants was from Title III Clean Air Act Amendments, 1990, and include compounds found in landfill gas, as determined from a list in AP-42 Tables 2.4-1 ("Default Concentrations for Landfill Gas Constituents, 11/98").

(b) Average concentration of compounds found in LFG based on "Waste Industry Air Coalition Comparison of Recent Landfill Gas Analyses with Historic AP-42 Values"

(c) Total pollutant emission rate based on estimated LFG generation rate.

(d) According to Gregory Canyon engineering evaluation, 81% of the LFG generation can reasonably be collected from a comprehensive gas system.

(e) Concentration of Mercury based on EPA AP-42 Section 2.4 Table 2.4-1 (11/98).

(f) NMOC concentration from EPA's AP-42, Section 2.4

(g) VOCs assumed to be 39% NMOCs per EPA AP-42, Section 2.4

(h) LFG generation modeling was performed using the U.S. Environmental Protection Agency (EPA) LandGEM model to estimate the amount of LFG being generated from the entire landfill project until 2024 when landfill is expected to reach current capacity.

Variables:

MODEL INPUT VARIABLES:		
Methane Concentration (%)	50%	
LFG generation rate (year 2024) (h)	911	SCFM
LFG Collection System efficiency (d)	85%	

CONVERSIONS

ton conversion	2000	lbs
lb conversion	453.6	g
hour conversion	60	min
day conversion	24	hrs
12 months	365	days
mol conversion	24.04	L @ STP
cf conversion	28.32	L
mmbtu conversion	1,000,000	btu
metric ton	1.1	English tons

Landgem GHG

CAS NUMBER	GHG Emittant	Gross Emission (TPY)	Controlled Emissions (TPY)
74-82-8	Methane	4976.4	746.46
124-38-9	Carbone Dioxide	13651	2047.65

EXAMPLE CALCULATIONS

(HAPS AND VOCS)

Total Pollutant Flow Rate (To Flare)= ((Molecular Weight of Compound[g/mol])* (Concentration of Compound[ppm]/1,000,000)* (Total LFG to Flare [cfm]) * (60min* 24hr* 365 days)* (1ton/2000 lb)* (1lb/453.6g)* (1mol/24.04L @ STP)* (28.32L/1cf)

Pollutant Flow rate = (Total pollutant flow rate [tons/yr])* (Collection efficiency)

Pollutant Emissions through landfill = (Total pollutant flow rate [tons/yr]) * (1 - collection efficiency)

TABLE 1.11
NEW CELL EXCAVATION EARTHWORKS POTENTIAL TO EMIT
EASTLAKE LANDFILL
CLEAR LAKE, CALIFORNIA

Emission Source:
Earthmoving Activities

Excavators Loading Topsoil
Amount of Soil Moved

Type of Vehicle[1]	Soil Density tons/yd^3	Total Soil Moved[1] yd^3/day	Amount (Tons) (per day)	Amount (Tons) (per year)
Excavator- CAT 330 w/5' bucket	1.35	5000.00	6,750.0	519,750

[1] Standard soil density assumed. Amount of soil moved from SCS memorandum from Joe Miller, September 4, 2019, "Eastlake Sanitary Landfill - "Estimated Heavy Equipment Use for New Cell Construction in Landfill Expansion Areas."

Operations Data[1]

77	days per year

[1] SCS memorandum from Joe Miller, September 4, 2019, "Eastlake Sanitary Landfill - "Estimated Heavy Equipment Use for New Cell Construction in Landfill Expansion Areas."

Fugitive Dust Control Measures:	Control Efficiency	Source:
Watering Roads as needed:	80%	Based on control efficiency from SDAPCD EI guidance
Chemical Dust Suppressents:	0%	EPA: AP-42, Section 13.2.2.3
Cumulative Total Control:	80%	

Emissions Calculation Methodology (AP-42, Section 11.19.2, Table 11.19.2-2, Truck Loading):

PM_{10}	=	1.00E-04	lb/ton	(PM_{10})
$PM_{2.5}$	=	2.83E-05	lb/ton	($PM_{2.5}$)

Emission factors for operations ND for $PM_{2.5}$ for most categories. Applied ratio of PM10 to $PM_{2.5}$ emission factor of Controlled Conveyor Transfer Point as worst -case.

SUMMARY OF PARTICULATE EMISSIONS FROM EXCAVATOR LOADING TOPSOIL TO TRUCK

Pollutant	Total Amount ton/day	Total Amount ton/yr	Emission Factor (lb/ton)	Control Efficiency (%)	Potential to Emit lbs/day	Potential to Emit tons/yr
$PM_{2.5}$	6,750.0	519,750	2.83E-05	80%	3.82E-02	1.47E-03
PM_{10}	6,750.0	519,750	1.00E-04	80%	1.35E-01	5.20E-03

Dump Truck Dumping Topsoil
Amount of Soil Moved

Type of Vehicle	Soil Density tons/yd^3	Total Soil Moved[1] yd^3/day	Amount (Tons) (per day)	Amount (Tons) (per year)
Dump Truck	1.35	5000.00	6,750.0	708,750

[1] Standard soil density assumed. Amount of soil moved from SCS memorandum from Joe Miller, September 4, 2019, "Eastlake Sanitary Landfill - "Estimated Heavy Equipment Use for New Cell Construction in Landfill Expansion Areas."

Operations Data[1]

105	days per year

[1] SCS memorandum from Joe Miller, September 4, 2019, "Eastlake Sanitary Landfill - "Estimated Heavy Equipment Use for New Cell Construction in Landfill Expansion Areas."

Fugitive Dust Control Measures:	Control Efficiency	Source:
Watering Roads as needed:	80%	EPA: AP-42, Section 13.2.2.2
Chemical Dust Suppressents:	0%	EPA: AP-42, Section 13.2.2.3
Cumulative Total Control:	80%	

Emissions Calculation Methodology (AP-42, Section 13.2.4, Equation 1):
E = k(0.0032) * ((U/5)^1.3) / (M/2)^1.4))

Where:

E=	Emission factor
k=	Particle size multiplier
U=	Mean wind speed (mph)
M=	Material moisture content (%)

Variables:

k =	0.35	Particle size multiplier (PM_{10})
k =	0.053	Particle size multiplier ($PM_{2.5}$)
U =	3.7	https://mesonet.agron.iastate.edu/sites/windrose.phtml?network=CA_ASOS&station=UKI
M =	11	EPA: AP-42, Table 13.2.4-1

Emission Factors

PM_{10} =	6.96E-05	lb/ton PM_{10}
$PM_{2.5}$ =	1.05E-05	lb/ton $PM_{2.5}$

SUMMARY OF PARTICULATE EMISSIONS FROM DUMP TRUCK DUMPING TOPSOIL FROM TRUCK

Pollutant	Total Amount ton/day	Total Amount ton/yr	Emission Factor (lb/ton)	Control Efficiency (%)	Potential to Emit lbs/day	Potential to Emit tons/yr
$PM_{2.5}$	6,750.0	708,750	1.05E-05	80%	1.42E-02	7.47E-04
PM_{10}	6,750.0	708,750	6.96E-05	80%	9.40E-02	4.93E-03

Bulldozing
Operations Data[1]

10	hours per day
105	days per year

[1] SCS memorandum from Joe Miller, September 4, 2019, "Eastlake Sanitary Landfill - "Estimated Heavy Equipment Use for New Cell Construction in Landfill Expansion Areas."

Fugitive Dust Control Measures:	Control Efficiency	Source:
Watering Roads as needed:	80%	
Chemical Dust Suppressents:	0%	EPA: AP-42, Section 13.2.2.3
Cumulative Total Control:	80%	

Emissions Calculation Methodology (AP-42, Section 11.9, Table 11.9-1 for Bulldozing):
PM_{25} =(5.7*(s1.2)/(M^1.3))*0.105
PM_{10} =((s^1.5)/(M^1.4))*0.75

Where:

s=	12	Percent Silt Content	(from AP-42, Table 13.2.4-1)
M=	11	Percent Moisture Content	(from AP-42, Table 13.2.4-1)

SUMMARY OF PARTICULATE EMISSIONS FROM BULLDOZING

Pollutant	Emission Factor		Potential to Emit

Pollutant	(lb/hr)	Control Efficiency (%)	lbs/day	tons/yr
$PM_{2.5}$	0.52	80%	1.05E+00	5.49E-02
PM_{10}	1.09	80%	2.17E+00	1.14E-01

Haul Trucks

Vehicle Miles Traveled (VMT)

Type of Vehicle	# of Trips per day[1]	Length of road (round trip)[2]		VMT Data	
		Feet	Miles	(per day)	(per year)
Haul Trucks (6)	185	3,117	0.59	109.3	8,417

[1] Vehicle usage data updated from Eastlake Project Description. Assumes that one haul truck carries 26.2 cubic yards.

[2] Haul distance estimated at 475 meters one way <-- Google Earth.

Operations Data

77	days per year

Fugitive Dust Control Measures:

	Control Efficiency	Source:
Watering Roads as needed:	80%	
Chemical Dust Suppressents:	0%	EPA: AP-42, Section 13.2.2.3
Cumulative Total Control:	80%	

Emissions Calculation Methodology (AP-42, Section 13.2.2 for Unpaved Roads):

$$E_{ext} = [k * (s/12)^a * (W/3)^b] * [(365 - p)/365]$$

Where:

E_{ext}= Annual size-specific emission factor extrapolated for natural mitigation (lb/VMT)

k= Empirical constant [lb/VMT]

a, b= Empirical constant [unitless]

s= Surface material silt content [%]

W= Vehicle weight [tons]

p= Number of days per year with >0.01 inch of rainfall (AP-42, Figure 13.2.2-1 or climate website)

Variables:

k factor for $PM_{2.5}$ =	0.15	lb/VMT	(from AP-42, Table 13.2.2-2.)
k factor for PM_{10} =	1.5	lb/VMT	(from AP-42, Table 13.2.2-2.)
Average Vehicle Weight (W)	46.00	tons	http://www.resqmed.com/VC4-Tm-info.htm
Mean Silt content (s)	6.4	%	(from AP-42, Table 13.2.2-1)
# of days w/ >0.01 in. rainfall (p)	75	days/year	(from AP-42, Figure 13.2.1-2)
a (constant) =	0.9		(from AP-42, Table 13.2.2-2.)
b (constant) =	0.45		(from AP-42, Table 13.2.2-2.)
E_{ext} =	0.23	lb/VMT	($PM_{2.5}$)
	2.31	lb/VMT	(PM_{10})

SUMMARY OF PARTICULATE EMISSIONS FROM HAUL TRUCK TRAVEL

Pollutant	Total VMT		Emission Factor	Control Efficiency	Potential to Emit	
	VMT/day	VMT/yr	(lb/VMT)	(%)	lbs/day	tons/yr
$PM_{2.5}$	109.3	8,417	0.23	80%	5.06	0.19
PM_{10}	109.3	8,417	2.31	80%	50.55	1.95

SUMMARY TOTAL EARTHMOVING ACTIVITIES

Pollutant	Excavators Loading Topsoil		Dump Truck Dumping Topsoil		Bulldozing		Haul Trucks		TOTAL	
	lbs/day	tons/yr	lbs/day	tons/yr	lbs/day	tons/yr	lbs/day	tons/yr	lbs/day	tons/yr
$PM_{2.5}$	3.82E-02	1.47E-03	1.42E-02	7.47E-04	1.05E+00	5.49E-02	5.06	0.19	6.15	0.25
PM_{10}	1.35E-01	5.20E-03	9.40E-02	4.93E-03	2.17E+00	1.14E-01	50.55	1.95	52.95	2.07

TABLE 1.12
BASE LINER CELL EARTHWORKS POTENTIAL TO EMIT
EASTLAKE LANDFILL
CLEAR LAKE, CALIFORNIA

Emission Source:
Earthmoving Activities

Excavators Loading Topsoil
Amount of Soil Moved

Type of Vehicle[1]	Soil Density	Total Soil Moved	Amount (Tons)	
	tons/yd^3	yd^3/day	(per day)	(per year)
Excavator- CAT 330 w/3' bucket	1.35	257.73	347.9	15,309

[1] Standard soil density assumed. Amount of soil moved is difference of total soil moved (396340 bcy) and total excavated.

Operations Data[1]

44	days per year

[1] SCS memorandum from Joe Miller, September 4, 2019, "Eastlake Sanitary Landfill - "Estimated Heavy Equipment Use for New Cell Construction in Landfill Expansion Areas."

Fugitive Dust Control Measures:	Control Efficiency	Source:
Watering Roads as needed:	80%	EPA: AP-42, Section 13.2.2.2
Chemical Dust Suppressents:	0%	EPA: AP-42, Section 13.2.2.3
Cumulative Total Control:	80%	

Emissions Calculation Methodology (AP-42, Section 11.19.2, Table 11.19.2-2, Truck Loading

PM_{10}	=	1.00E-04	lb/ton	(PM_{10})
$PM_{2.5}$	=	2.83E-05	lb/ton	($PM_{2.5}$)

Emission factors for operations ND for $PM_{2.5}$ for most categories. Applied ratio of PM10 to $PM_{2.5}$ emission factor of Controlled Conveyor Transfer Point as worst -case.

SUMMARY OF PARTICULATE EMISSIONS FROM EXCAVATORS LOADING TOPSOIL

Pollutant	Total Amount		Emission Factor	Control Efficiency	Potential to Emit	
	ton/day	ton/yr	(lb/ton)	(%)	lbs/day	tons/yr
$PM_{2.5}$	347.9	15,309	2.83E-05	80%	1.97E-03	4.33E-05
PM_{10}	347.9	15,309	1.00E-04	80%	6.96E-03	1.53E-04

Haul Trucks
Vehicle Miles Traveled (VMT)

Type of Vehicle	# of Trips per day[1]	Length of road (round trip)[2]		VMT Data	
		Feet	Miles	(per day)	(per year)
Haul Trucks	10	3,117	0.59	5.8	255

[1] Vehicle usage data from Eastlake Project Description. Assumes one haul truck carries 26.2 cubic yards.
[2] Haul distance estimated at 475 meters one way <-- Google Earth.

Operations Data

44	days per year

Fugitive Dust Control Measures:	Control Efficiency	Source:
Watering Roads as needed:	80%	
Chemical Dust Suppressents:	0%	EPA: AP-42, Section 13.2.2.3
Cumulative Total Control:	80%	

Emissions Calculation Methodology (AP-42, Section 13.2.2 for Unpaved Roads):

$$E_{ext} = [k * (s/12)^a * (W/3)^b] * [(365 - p)/365]$$

Where:

E_{ext} = Annual size-specific emission factor extrapolated for natural mitigation (lb/VMT)
k = Empirical constant [lb/VMT]
a, b = Empirical constant [unitless]
s = Surface material silt content [%]
W = Vehicle weight [tons]
p = Number of days per year with >0.01 inch of rainfall (AP-42, Figure 13.2.2-1 or climate website)

Variables:

k factor for $PM_{2.5}$ =	0.15	lb/VMT	(from AP-42, Table 13.2.2-2.)
k factor for PM_{10} =	1.5	lb/VMT	(from AP-42, Table 13.2.2-2.)
Average Vehicle Weight (W)	46.00	tons	http://www.resqmed.com/VC4-Tm-info.htm
Mean Silt content (s)	6.4	%	(from AP-42, Table 13.2.2-1)
# of days w/ >0.01 in. rainfall (p)	75	days/year	(from AP-42, Figure 13.2.1-2)
a (constant) =	0.9		(from AP-42, Table 13.2.2-2.)
b (constant) =	0.45		(from AP-42, Table 13.2.2-2.)

E_{ext} =	0.23	lb/VMT	($PM_{2.5}$)
	2.31	lb/VMT	(PM_{10})

SUMMARY OF PARTICULATE EMISSIONS FROM BELLY DUMP TRAILER TRAVEL

Pollutant	Total VMT		Emission Factor	Control Efficiency	Potential to Emit	
	VMT/day	VMT/yr	(lb/VMT)	(%)	lbs/day	tons/yr
$PM_{2.5}$	5.8	255	0.23	80%	0.27	0.01
PM_{10}	5.8	255	2.31	80%	2.69	0.06

SUMMARY TOTAL EARTHMOVING ACTIVITIES

Pollutant	Excavators Loading Topsoil		Haul Trucks		TOTAL	
	lbs/day	tons/yr	lbs/day	tons/yr	lbs/day	tons/yr
$PM_{2.5}$	1.97E-03	4.33E-05	0.27	0.01	0.27	0.01
PM_{10}	6.96E-03	1.53E-04	2.69	0.06	2.69	0.06

TABLE 1.13
NEW CELL EXCAVATION EARTHWORKS EXHAUST POTENTIAL TO EMIT

Exc avation Duration (Days)	77
Pounds per ton	2000

Emission Factors[1]

Equipment	Quantity	Hours / (Day*Qty)	Hours/yr	ROG lbs/hr	CO lbs/hr	NOx lbs/hr	SOx lbs/hr	PM lbs/hr	CO2 lbs/hr	CH4 lbs/hr
Excavator- CAT 330 W/ 5' BUCKET	2	8	1232	0.0585	0.5091	0.2524	0.0013	0.0101	120	0.0053
Haul Truck- CAT 752C2 [2]	6	8	3696	0.1189	0.5401	0.5286	0.0027	0.0164	260	0.0107
Dozer- CAT D8	1	8	616	0.1748	0.6835	1.1695	0.0025	0.0455	239	0.0158
Dozer- CAT D6	2	8	1232	0.1748	0.6835	1.1695	0.0025	0.0455	239	0.0158
Water Truck [2]	2	8	1232	0.1189	0.5401	0.5286	0.0027	0.0164	260	0.0107

Daily Emissions

Equipment	Quantity	Hours / (Day*Qty)	Hours/yr	ROG lbs/day	CO lbs/day	NOx lbs/day	SOx lbs/day	PM lbs/day	CO2 lbs/day	CH4 lbs/day
Excavator- CAT 330 W/ 5' BUCKET	2	8	1232	0.94	8.15	4.04	0.02	0.16	1920.00	0.08
Haul Truck- CAT 752C2	6	8	3696	5.71	25.92	25.37	0.13	0.79	12483.36	0.51
Dozer- CAT D8	1	8	616	1.40	5.47	9.36	0.02	0.36	1912.63	0.13
Dozer- CAT D6	2	8	1232	2.80	10.94	18.71	0.04	0.73	3825.27	0.25
Water Truck	2	8	1232	1.90	8.64	8.46	0.04	0.26	4161.12	0.17
			Totals	**11.8018**	**50.97**	**61.90**	**0.23**	**2.14**	**22382**	**1.06**

Annual Emissions

Equipment	Quantity	Hours / (Day*Qty)	Hours/yr	ROG tons/yr	CO tons/yr	Nox tons/yr	SOx tons/yr	PM tons/yr	CO2 tons/yr	CH4 tons/yr
Excavator- CAT 330 W/ 5' BUCKET	2	8	1232	0.07	0.63	0.31	0.00	0.01	147.84	0.01
Haul Truck- CAT 752C2	6	8	3696	1.32	5.99	5.86	0.03	0.18	2883.66	0.12
Dozer- CAT D8	1	8	616	0.05	0.21	0.36	0.00	0.01	73.64	0.00
Dozer- CAT D6	2	8	1232	0.22	0.84	1.44	0.00	0.06	294.55	0.02
Water Truck	2	8	1232	0.15	0.67	0.65	0.00	0.02	320.41	0.01
			Totals	**1.73**	**7.71**	**8.31**	**0.04**	**0.27**	**3572**	**0.16**

[1] CARB's Off-Road Model, composite emission factors.
[2] Offroad mobile source emission factors as "Off highway trucks."

TABLE 1.14
BASE LINER CELL EARTHWORKS EXHAUST

Exc avation Duration (Days)	60
Pounds per ton	2000

Emission Factors[1]

Equipment	Quantity	Hours / (Day*Qty)	Hours/yr	ROG lbs/hr	CO lbs/hr	NOx lbs/hr	SOx lbs/hr	PM lbs/hr	CO2 lbs/hr	CH4 lbs/hr
Excavator- CAT 330 W/ 5' BUCKET	1	8	480	0.0585	0.5091	0.2524	0.0013	0.0101	120	0.0053
Haul Truck- CAT 752C2 [2]	2	0.7	88	0.1189	0.5401	0.5286	0.0027	0.0164	260	0.0107
Telehandler- BOBCAT V519[3]	1	8	480	0.1192	0.6165	0.7884	0.0017	0.0360	151	0.0108
Utility Vehicle- BOBCAT 3400[4]	1	8	480	0.0416	0.4433	0.2499	0.0008	0.0106	70.3	0.0038

Daily Emissions

Equipment	Quantity	Hours / (Day*Qty)	Hours/yr	ROG lbs/day	CO lbs/day	NOx lbs/day	SOx lbs/day	PM lbs/day	CO2 lbs/day	CH4 lbs/day
Excavator- CAT 330 W/ 5' BUCKET	1	8	480	0.47	4.07	2.02	0.01	0.08	960.00	0.04
Haul Truck- CAT 752C2	2	0.7	88	0.17	0.79	0.77	0.00	0.02	380.73	0.02
Telehandler- BOBCAT V519	1	8	480	0.95	4.93	6.31	0.01	0.29	1211.12	0.09
Utility Vehicle- BOBCAT 3400	1	8	480	0.33	3.55	2.00	0.01	0.09	562.25	0.03
			Totals	**1.93**	**13.34**	**11.10**	**0.03**	**0.48**	**3114.09**	**0.17**

Annual Emissions

Equipment	Quantity	Hours / (Day*Qty)	Hours/yr	ROG tons/yr	CO tons/yr	Nox tons/yr	SOx tons/yr	PM tons/yr	CO2 tons/yr	CH4 tons/yr
Excavator- CAT 330 W/ 5' BUCKET	1	8	480	0.01	0.12	0.06	0.00	0.00	28.80	0.00
Haul Truck- CAT 752C2	2	0.7	88	0.01	0.05	0.05	0.00	0.00	22.84	0.00
Telehandler- BOBCAT V519	1	8	480	0.03	0.15	0.19	0.00	0.01	36.33	0.00
Utility Vehicle- BOBCAT 3400	1	8	480	0.01	0.11	0.06	0.00	0.00	16.87	0.00
			Totals	**0.06**	**0.42**	**0.36**	**0.00**	**0.02**	**104.84**	**0.01**

[1} CARB's Off-Road Model, composite emission factors.
[2] Offroad mobile source emission factors as "Off highway trucks."
[3] Offroad mobile source emission factors as "Off highway tractors."
[4] Offroad mobile source emission factors as "Rough Terrain Forklifts."

TABLE 1.15
POTENTIAL TO EMIT FUGITIVE DUST EMISSIONS FROM EXCAVATION STOCKPILES
EASTLAKE LANDFILL
CLEAR LAKE, CALIFORNIA

Emission Source:
Cover Stockpile\Surface

Assumptions:
For conservative purposes, assume aerodynamic particle size is less than 10 microns.
Water trucks are utilized twice daily as needed for a dust control efficiency of 80%

CALCULATION OF EMISSIONS FROM WIND EROSION OF COVER STORAGE PILES:

Pollutant	Emission Factor (tons/acre)[1]	Soil Stockpile Area (acres)	Potential to Emit (lb/day)	Potential to Emit (tons/yr)
$PM_{2.5}$	0.029	10	0.32	0.06
PM_{10}	0.19	10	2.08	0.38

[1] Emission factors from AP-42, Section 13.2.5.

Attachment 2

Health Risk Assessment

2A. AERMOD Dispersion Input / Output

```
**
**************************************
**
** AERMOD Input Produced by:
** AERMOD View Ver. 9.7.0
** Lakes Environmental Software Inc.
** Date: 11/26/2019
** File: C:\Users\4756dlw\Documents\Projects\Eastlake LF Expansion
\AERMOD\Eastlake Sanitary Landfill\Eastlake Sanitary Landfill.ADI
**
**************************************
**
**
**************************************
** AERMOD Control Pathway
**************************************
**
**
CO STARTING
   TITLEONE C:\Users\4756dlw\Documents\Projects\Eastlake LF Expansion
\AERMOD\Eas
   MODELOPT DFAULT CONC
   AVERTIME 1 PERIOD
   POLLUTID TAC
   RUNORNOT RUN
   ERRORFIL "Eastlake Sanitary Landfill.err"
CO FINISHED
**
**************************************
** AERMOD Source Pathway
**************************************
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
   LOCATION FLARE        POINT      534852.000  4311828.000
524.760
** DESCRSRC PEI Enclosed Flare
   LOCATION LANDFILL     AREAPOLY   534567.000  4311566.000
520.980
** DESCRSRC Landfill Area
** Source Parameters **
   SRCPARAM FLARE              1.0    10.668  1020.928   0.53325
1.829
   SRCPARAM LANDFILL     0.0000169791     5.000        10     2.326
   AREAVERT LANDFILL     534567.000 4311566.000 534402.000 4311620.000
   AREAVERT LANDFILL     534390.000 4311750.000 534465.000 4311790.000
   AREAVERT LANDFILL     534545.000 4311840.000 534558.000 4311823.000
```

```
   AREAVERT LANDFILL     534720.000 4311888.000 534774.000 4311846.000
   AREAVERT LANDFILL     534580.000 4311695.000 534629.000 4311648.000
   SRCGROUP ALL
SO FINISHED
**
**************************************
** AERMOD Receptor Pathway
**************************************
**
**
RE STARTING
   INCLUDED "Eastlake Sanitary Landfill.rou"
RE FINISHED
**
**************************************
** AERMOD Meteorology Pathway
**************************************
**
**
ME STARTING
   SURFFILE "Met Data\725905.SFC"
   PROFFILE "Met Data\725905.PFL"
   SURFDATA 23275 2009 Ukiah
   UAIRDATA 23230 2009 OAKLAND/WSO_AP
   PROFBASE 610.0 FEET
ME FINISHED
**
**************************************
** AERMOD Output Pathway
**************************************
**
**
OU STARTING
   RECTABLE ALLAVE 1ST
   RECTABLE 1 1ST
** Auto-Generated Plotfiles
   PLOTFILE 1 ALL 1ST "Eastlake Sanitary Landfill.AD\01H1GALL.PLT" 31
   PLOTFILE PERIOD ALL "Eastlake Sanitary Landfill.AD\PE00GALL.PLT" 32
   SUMMFILE "Eastlake Sanitary Landfill.sum"
OU FINISHED

 ***********************************
 *** SETUP Finishes Successfully ***
 ***********************************
```

```
 *** AERMOD - VERSION  18081 ***   *** C:\Users\4756dlw\Documents
\Projects\Eastlake LF Expansion\AERMOD\Eas ***        11/26/19
 *** AERMET - VERSION  14134 ***   ***
***        19:03:51

PAGE   1
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL

                                                     ***     MODEL SETUP
OPTIONS SUMMARY       ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - - - -

 **Model Is Setup For Calculation of Average CONCentration Values.

   --  DEPOSITION LOGIC  --
 **NO GAS DEPOSITION Data Provided.
 **NO PARTICLE DEPOSITION Data Provided.
 **Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
 **Model Uses NO WET DEPLETION.  WETDPLT  =  F

 **Model Uses RURAL Dispersion Only.

 **Model Uses Regulatory DEFAULT Options:
         1. Stack-tip Downwash.
         2. Model Accounts for ELEVated Terrain Effects.
         3. Use Calms Processing Routine.
         4. Use Missing Data Processing Routine.
         5. No Exponential Decay.

 **Other Options Specified:
         CCVR_Sub - Meteorological data includes CCVR substitutions
         TEMP_Sub - Meteorological data includes TEMP substitutions

 **Model Assumes No FLAGPOLE Receptor Heights.

 **The User Specified a Pollutant Type of:  TAC

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

 **This Run Includes:      2 Source(s);       1 Source Group(s); and
489 Receptor(s)

                with:      1 POINT(s), including
                           0 POINTCAP(s) and      0 POINTHOR(s)
                 and:      0 VOLUME source(s)
                 and:      1 AREA type source(s)
                 and:      0 LINE source(s)
```

```
                and:      0 OPENPIT source(s)
                and:      0 BUOYANT LINE source(s) with      0
line(s)


 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date:  14134

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

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

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

 **Approximate Storage Requirements of Model =      3.6 MB of RAM.

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

 **Detailed Error/Message File:   Eastlake Sanitary Landfill.err
 **File for Summary of Results:   Eastlake Sanitary Landfill.sum
```

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** POINT SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	BASE X (METERS)	BASE Y (METERS)	STACK ELEV. (METERS)	STACK HEIGHT (METERS)	STACK TEMP. (DEG.K)	STACK EXIT VEL. (M/SEC)	STACK DIAMETER (METERS)	BLDG EXISTS	URBAN SOURCE	CAP/ HOR VARY BY	EMIS RATE SCALAR
FLARE	0	0.10000E+01	534852.0	4311828.0	524.8	10.67	1020.93	0.53	1.83	NO	NO	NO	

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** AREAPOLY SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC /METER**2)	LOCATION OF AREA X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	NUMBER OF VERTS.	INIT. SZ (METERS)	URBAN SOURCE BY	EMISSION RATE SCALAR VARY
LANDFILL	0	0.16979E-04	534567.0	4311566.0	521.0	5.00	10	2.33	NO	

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** SOURCE IDs DEFINING
SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs
ALL	FLARE , LANDFILL ,

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** GRIDDED RECEPTOR NETWORK SUMMARY ***

*** NETWORK ID: UCART1 ; NETWORK TYPE: GRIDCART ***

*** X-COORDINATES OF GRID ***

(METERS)

533182.9, 533282.9, 533382.9, 533482.9, 533582.9,
533682.9, 533782.9, 533882.9, 533982.9, 534082.9,
534182.9, 534282.9, 534382.9, 534482.9, 534582.9,
534682.9, 534782.9, 534882.9, 534982.9, 535082.9,
535182.9,

*** Y-COORDINATES OF GRID ***

(METERS)

4310557.2, 4310657.2, 4310757.2, 4310857.2, 4310957.2,
4311057.2, 4311157.2, 4311257.2, 4311357.2, 4311457.2,
4311557.2, 4311657.2, 4311757.2, 4311857.2, 4311957.2,
4312057.2, 4312157.2, 4312257.2, 4312357.2, 4312457.2,
4312557.2,

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** NETWORK ID: UCART1 ; NETWORK TYPE: GRIDCART ***

* ELEVATION HEIGHTS IN METERS *

Y-COORD (METERS)	X-COORD (METERS)				
	533182.89	533282.89	533382.89	533482.89	533582.89
533682.89	533782.89	533882.89	533982.89		
4312557.16	489.70	502.70	517.60	536.80	561.60
587.30	602.60	608.20	612.50		
4312457.16	491.80	504.00	517.80	531.70	547.50
565.90	582.00	593.50	606.50		
4312357.16	492.50	501.90	510.40	524.90	534.60
546.50	562.10	582.50	598.20		
4312257.16	489.50	492.50	501.90	513.30	521.70
528.70	545.70	564.20	588.30		
4312157.16	498.40	485.30	488.30	501.90	509.90
512.20	523.00	545.10	577.70		
4312057.16	499.90	482.40	481.90	488.70	492.20
501.20	511.10	531.40	564.70		
4311957.16	488.20	486.80	475.20	480.00	484.80
489.70	498.90	516.90	541.00		
4311857.16	487.80	485.50	475.00	474.00	475.10
477.90	487.00	499.50	516.30		
4311757.16	486.80	483.20	478.00	474.40	473.80
473.90	478.90	486.90	496.90		
4311657.16	476.20	478.90	478.40	475.50	473.80
472.20	474.00	480.20	487.50		
4311557.16	465.10	474.60	477.00	476.10	473.50
470.00	472.00	477.30	483.50		
4311457.16	463.80	469.10	473.90	476.00	472.80
465.30	469.60	473.00	474.90		
4311357.16	461.50	462.40	464.80	470.70	475.90
463.20	465.70	471.50	477.10		
4311257.16	452.00	458.30	461.00	463.90	470.90
476.60	463.00	470.80	476.60		

4311157.16	462.90	457.80	459.90	461.70	462.80
466.10	463.90	468.50	474.70		
4311057.16	452.80	456.30	458.60	460.30	462.30
463.00	463.00	464.50	470.60		
4310957.16	458.80	459.90	461.00	461.90	462.30
464.60	465.00	465.90	471.80		
4310857.16	464.00	464.00	464.00	464.00	464.10
464.90	467.30	469.60	473.30		
4310757.16	462.20	464.50	463.60	463.40	465.00
466.60	467.90	470.30	474.70		
4310657.16	455.00	462.60	463.40	460.00	464.00
465.60	466.90	468.00	467.50		
4310557.16	450.40	451.40	451.20	457.00	463.20
463.70	466.90	465.40	462.80		

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** NETWORK ID: UCART1 ; NETWORK
TYPE: GRIDCART ***

* ELEVATION HEIGHTS IN
METERS *

Y-COORD (METERS)	X-COORD (METERS)				
	534082.89	534182.89	534282.89	534382.89	534482.89
534582.89	534682.89	534782.89	534882.89		
4312557.16	621.90	611.30	603.80	597.70	595.80
607.20	621.60	620.50	632.70		
4312457.16	617.80	619.50	612.30	609.00	597.70
603.20	621.40	621.00	630.50		
4312357.16	611.30	618.90	623.50	617.50	604.80
601.00	608.40	624.10	629.20		
4312257.16	603.80	618.40	626.00	620.30	605.20
599.40	606.20	622.80	631.20		
4312157.16	593.80	611.20	623.60	624.90	609.50
588.60	595.90	618.70	627.10		
4312057.16	584.20	598.50	610.10	611.60	598.40
570.00	572.50	575.50	592.70		
4311957.16	563.90	578.90	584.70	576.90	564.30
545.40	539.20	537.50	558.40		
4311857.16	533.90	548.10	552.30	541.70	529.10
517.50	508.40	517.20	530.80		
4311757.16	512.40	520.70	526.30	516.90	501.30
498.30	521.30	525.20	512.20		
4311657.16	503.40	501.10	513.30	500.40	491.70
522.30	527.10	511.40	535.40		
4311557.16	487.20	486.40	507.40	491.60	502.20
523.40	517.80	501.20	514.90		
4311457.16	482.20	491.10	502.10	484.70	506.40
525.10	499.50	508.30	525.60		
4311357.16	483.50	497.80	495.30	478.90	506.80
508.50	494.60	516.70	532.10		
4311257.16	481.90	488.00	485.00	476.00	500.40
489.20	507.90	527.90	523.20		

```
  4311157.16 |       475.80       475.10       476.00       480.10
487.30       481.50       495.20       495.70       503.70
  4311057.16 |       473.90       477.20       486.80       485.20
487.80       475.40       495.90       512.70       523.90
  4310957.16 |       476.00       479.30       480.10       484.70
487.00       473.80       483.80       501.10       516.80
  4310857.16 |       476.60       477.40       474.90       480.20
476.50       474.90       484.80       497.80       506.10
  4310757.16 |       476.00       475.10       473.90       473.80
463.10       483.80       489.60       493.40       485.80
  4310657.16 |       467.00       463.60       465.70       464.30
472.50       484.00       486.00       488.80       469.10
  4310557.16 |       461.00       455.80       459.70       452.10
467.90       482.50       480.20       485.90       466.70
```

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** NETWORK ID: UCART1 ; NETWORK TYPE: GRIDCART ***

* ELEVATION HEIGHTS IN METERS *

Y-COORD (METERS)	X-COORD (METERS)	534982.89	535082.89	535182.89
4312557.16		639.20	645.90	648.90
4312457.16		633.80	636.50	628.70
4312357.16		634.90	625.00	604.50
4312257.16		635.60	617.20	591.40
4312157.16		635.10	608.90	585.50
4312057.16		595.90	585.20	583.50
4311957.16		560.20	555.50	587.90
4311857.16		528.00	557.40	561.60
4311757.16		520.10	533.60	533.80
4311657.16		552.30	555.00	565.30
4311557.16		531.60	544.90	536.00
4311457.16		539.40	551.50	520.00
4311357.16		540.20	538.40	521.90
4311257.16		518.40	536.40	510.80
4311157.16		526.40	518.60	497.40
4311057.16		520.00	495.80	502.60
4310957.16		500.40	489.90	492.00
4310857.16		487.40	472.70	499.10
4310757.16		475.90	477.20	499.20
4310657.16		461.20	488.00	483.60
4310557.16		479.10	468.80	470.60

*** NETWORK ID: UCART1 ; NETWORK TYPE: GRIDCART ***

* HILL HEIGHT SCALES IN METERS *

Y-COORD (METERS)	X-COORD (METERS)				
	533182.89	533282.89	533382.89	533482.89	533582.89
533682.89	533782.89	533882.89	533982.89		
4312557.16	626.00	626.00	626.00	626.00	624.00
624.00	624.00	624.00	624.00	621.00	
4312457.16	626.00	626.00	626.00	626.00	626.00
624.00	624.00	624.00	624.00	623.00	
4312357.16	626.00	626.00	626.00	626.00	626.00
626.00	626.00	626.00	626.00	624.00	
4312257.16	626.00	626.00	626.00	626.00	626.00
626.00	626.00	626.00	626.00	626.00	
4312157.16	626.00	626.00	626.00	626.00	626.00
626.00	626.00	626.00	626.00	626.00	
4312057.16	626.00	626.00	626.00	637.00	637.00
637.00	637.00	637.00	626.00	626.00	
4311957.16	626.00	626.00	637.00	637.00	644.00
650.00	650.00	650.00	637.00	626.00	
4311857.16	626.00	626.00	637.00	638.00	650.00
651.00	651.00	650.00	644.00		
4311757.16	626.00	626.00	626.00	637.00	649.00
651.00	651.00	651.00	651.00	651.00	
4311657.16	626.00	626.00	626.00	637.00	637.00
650.00	651.00	651.00	651.00	651.00	
4311557.16	626.00	626.00	626.00	637.00	637.00
650.00	651.00	651.00	651.00	651.00	
4311457.16	626.00	626.00	626.00	626.00	637.00
650.00	650.00	651.00	651.00	651.00	
4311357.16	626.00	626.00	626.00	626.00	637.00
637.00	650.00	650.00	650.00	650.00	
4311257.16	626.00	626.00	626.00	637.00	637.00
637.00	648.00	638.00	648.00		

4311157.16	626.00	626.00	626.00	626.00	637.00
637.00	637.00	637.00	637.00	637.00	
4311057.16	626.00	626.00	626.00	626.00	626.00
626.00	637.00	637.00	637.00	637.00	
4310957.16	625.00	626.00	626.00	626.00	626.00
626.00	626.00	637.00	637.00	637.00	
4310857.16	464.00	464.00	624.00	626.00	626.00
626.00	626.00	626.00	626.00	637.00	
4310757.16	462.20	464.50	463.60	463.40	625.00
626.00	626.00	626.00	626.00		
4310657.16	462.00	462.60	463.40	460.00	464.00
465.60	466.90	624.00	625.00		
4310557.16	450.40	464.00	464.00	464.00	463.20
463.70	466.90	465.40	462.80		

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** NETWORK ID: UCART1 ; NETWORK
TYPE: GRIDCART ***

* HILL HEIGHT SCALES
IN METERS *

Y-COORD (METERS)	X-COORD (METERS)				
	534082.89	534182.89	534282.89	534382.89	534482.89
534582.89	534682.89	534782.89	534882.89		
4312557.16	621.90	623.00	623.00	626.00	625.00
623.00	621.60	638.00	632.70		
4312457.16	622.00	621.00	625.00	625.00	626.00
624.00	622.00	634.00	634.00		
4312357.16	622.00	622.00	623.50	625.00	626.00
627.00	634.00	624.10	629.20		
4312257.16	626.00	624.00	626.00	624.00	626.00
635.00	637.00	622.80	631.20		
4312157.16	626.00	626.00	623.60	624.90	625.00
637.00	637.00	637.00	637.00		
4312057.16	626.00	626.00	626.00	625.00	626.00
650.00	651.00	651.00	650.00		
4311957.16	626.00	626.00	626.00	635.00	637.00
655.00	655.00	655.00	655.00		
4311857.16	637.00	637.00	637.00	650.00	655.00
655.00	655.00	655.00	655.00		
4311757.16	650.00	650.00	650.00	655.00	655.00
655.00	655.00	655.00	655.00		
4311657.16	650.00	651.00	651.00	655.00	655.00
655.00	655.00	655.00	655.00		
4311557.16	651.00	655.00	651.00	655.00	655.00
655.00	655.00	655.00	655.00		
4311457.16	651.00	651.00	651.00	655.00	655.00
655.00	650.00	655.00	655.00		
4311357.16	650.00	648.00	650.00	655.00	650.00
655.00	655.00	655.00	637.00		
4311257.16	649.00	649.00	651.00	655.00	650.00
655.00	654.00	637.00	637.00		

4311157.16	648.00	650.00	654.00	655.00	655.00
655.00	655.00	655.00	655.00	655.00	
4311057.16	637.00	637.00	637.00	637.00	648.00
655.00	637.00	637.00	637.00		
4310957.16	637.00	637.00	637.00	637.00	637.00
655.00	650.00	637.00	637.00		
4310857.16	637.00	637.00	637.00	637.00	637.00
637.00	637.00	637.00	637.00		
4310757.16	626.00	637.00	637.00	637.00	637.00
637.00	637.00	637.00	637.00		
4310657.16	626.00	637.00	637.00	637.00	637.00
637.00	490.00	486.00	488.80	637.00	
4310557.16	625.00	637.00	637.00	637.00	637.00
637.00	490.00	490.00	489.00	637.00	

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** NETWORK ID: UCART1 ; NETWORK TYPE: GRIDCART ***

* HILL HEIGHT SCALES IN METERS *

Y-COORD (METERS)	X-COORD (METERS)	534982.89	535082.89	535182.89
4312557.16	639.20	645.90	648.90
4312457.16	633.80	650.00	651.00
4312357.16	634.90	650.00	655.00
4312257.16	635.60	650.00	655.00
4312157.16	635.10	650.00	655.00
4312057.16	650.00	655.00	655.00
4311957.16	655.00	655.00	655.00
4311857.16	655.00	655.00	655.00
4311757.16	655.00	655.00	655.00
4311657.16	655.00	655.00	655.00
4311557.16	655.00	655.00	655.00
4311457.16	655.00	637.00	655.00
4311357.16	637.00	637.00	655.00
4311257.16	655.00	637.00	655.00
4311157.16	637.00	637.00	655.00
4311057.16	637.00	655.00	655.00
4310957.16	637.00	655.00	655.00
4310857.16	637.00	655.00	637.00
4310757.16	654.00	655.00	635.00
4310657.16	655.00	635.00	637.00
4310557.16	635.00	637.00	637.00

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** DISCRETE CARTESIAN
RECEPTORS ***
(X-COORD, Y-COORD, ZELEV,
ZHILL, ZFLAG)
(METERS)

(533957.0, 4311882.0, 516.9, 637.0, 0.0);
(533711.0, 4311848.0, 479.8, 651.0, 0.0);
(534870.0, 4311815.0, 521.3, 655.0, 0.0);
(534770.0, 4311705.0, 519.0, 655.0, 0.0);
(534670.0, 4311412.0, 499.6, 655.0, 0.0);
(534508.0, 4311155.0, 487.8, 655.0, 0.0);
(534370.0, 4311299.0, 476.2, 655.0, 0.0);
(534330.0, 4311410.0, 487.6, 655.0, 0.0);
(534280.0, 4311755.0, 525.7, 650.0, 0.0);
(534761.0, 4311925.0, 525.5, 655.0, 0.0);
(534836.7, 4311778.3, 517.3, 655.0, 0.0);
(534803.3, 4311741.7, 517.7, 655.0, 0.0);
(534755.7, 4311663.1, 516.9, 655.0, 0.0);
(534741.4, 4311621.3, 514.1, 655.0, 0.0);
(534727.1, 4311579.4, 507.9, 655.0, 0.0);
(534712.9, 4311537.6, 507.1, 655.0, 0.0);
(534698.6, 4311495.7, 504.3, 655.0, 0.0);
(534684.3, 4311453.9, 498.6, 655.0, 0.0);
(534646.9, 4311375.3, 496.4, 655.0, 0.0);
(534623.7, 4311338.6, 492.8, 655.0, 0.0);
(534600.6, 4311301.9, 489.7, 655.0, 0.0);
(534577.4, 4311265.1, 490.3, 655.0, 0.0);
(534554.3, 4311228.4, 490.9, 655.0, 0.0);
(534531.1, 4311191.7, 490.9, 655.0, 0.0);
(534473.5, 4311191.0, 489.5, 655.0, 0.0);
(534439.0, 4311227.0, 491.8, 654.0, 0.0);
(534404.5, 4311263.0, 481.7, 655.0, 0.0);
(534356.7, 4311336.0, 477.3, 655.0, 0.0);
(534343.3, 4311373.0, 484.6, 655.0, 0.0);
(534322.9, 4311459.3, 494.3, 655.0, 0.0);
(534315.7, 4311508.6, 502.2, 654.0, 0.0);
(534308.6, 4311557.9, 509.4, 651.0, 0.0);
(534301.4, 4311607.1, 513.7, 651.0, 0.0);
(534294.3, 4311656.4, 516.9, 651.0, 0.0);
(534287.1, 4311705.7, 519.4, 651.0, 0.0);

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( 534323.7, 4311770.5,     527.1,     651.0,       0.0);
     ( 534367.5, 4311785.9,     525.7,     651.0,       0.0);
( 534411.2, 4311801.4,     522.7,     655.0,       0.0);
     ( 534454.9, 4311816.8,     521.1,     655.0,       0.0);
( 534498.6, 4311832.3,     519.7,     655.0,       0.0);
     ( 534542.4, 4311847.7,     517.9,     655.0,       0.0);
( 534586.1, 4311863.2,     518.9,     655.0,       0.0);
     ( 534629.8, 4311878.6,     517.5,     655.0,       0.0);
( 534673.6, 4311894.1,     520.7,     655.0,       0.0);
     ( 534717.3, 4311909.5,     523.4,     655.0,       0.0);
( 534788.2, 4311897.5,     522.8,     655.0,       0.0);
     ( 534815.5, 4311870.0,     522.5,     655.0,       0.0);
( 534842.8, 4311842.5,     525.0,     655.0,       0.0);
```

```
 *** AERMOD - VERSION  18081 ***   *** C:\Users\4756dlw\Documents
\Projects\Eastlake LF Expansion\AERMOD\Eas ***        11/26/19
 *** AERMET - VERSION  14134 ***   ***
***         19:03:51

PAGE  13
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL

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

            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1
1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1
1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1
1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1
1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1
1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1
1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1
1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1

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



                                          *** UPPER BOUND OF FIRST THROUGH
FIFTH WIND SPEED CATEGORIES ***

(METERS/SEC)

                                                             1.54,   3.09,   5.14,
8.23,  10.80,
```

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

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

Surface file: Met Data\725905.SFC
Met Version: 14134
Profile file: Met Data\725905.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 23275 Upper air station no.: 23230
Name: UKIAH Name: OAKLAND/WSO_AP
Year: 2009 Year: 2009

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
09	01	01	1	01	-3.7	0.073	-9.000	-9.000	-999.	47.	9.4	0.08	0.90	1.00	1.76	271.	10.0	282.0	2.0
09	01	01	1	02	-8.6	0.154	-9.000	-9.000	-999.	146.	38.1	0.08	0.90	1.00	2.36	318.	10.0	282.0	2.0
09	01	01	1	03	-3.7	0.073	-9.000	-9.000	-999.	50.	9.5	0.08	0.90	1.00	1.76	314.	10.0	281.4	2.0
09	01	01	1	04	-3.7	0.073	-9.000	-9.000	-999.	48.	9.5	0.08	0.90	1.00	1.76	333.	10.0	281.4	2.0
09	01	01	1	05	-3.7	0.073	-9.000	-9.000	-999.	47.	9.4	0.08	0.90	1.00	1.76	293.	10.0	280.9	2.0
09	01	01	1	06	-8.6	0.154	-9.000	-9.000	-999.	145.	37.9	0.08	0.90	1.00	2.36	332.	10.0	280.9	2.0
09	01	01	1	07	-3.7	0.073	-9.000	-9.000	-999.	50.	9.4	0.08	0.90	1.00	1.76	305.	10.0	280.4	2.0
09	01	01	1	08	-3.7	0.073	-9.000	-9.000	-999.	48.	9.5	0.08	0.90	1.00	1.76	303.	10.0	280.9	2.0
09	01	01	1	09	-0.9	0.142	-9.000	-9.000	-999.	128.	297.2	0.08	0.90	0.43	1.76	327.	10.0	280.4	2.0
09	01	01	1	10	33.4	-9.000	-9.000	-9.000	217.	-999.	-99999.0	0.07	0.90	0.28	0.00	0.	10.0	282.0	2.0
09	01	01	1	11	74.2	0.192	0.930	0.016	387.	203.	-8.6								

```
0.08   0.90   0.23    1.76  294.   10.0  283.1    2.0
 09 01 01   1 12   45.1 -9.000 -9.000 -9.000  441. -999. -99999.0
0.07   0.90   0.21    0.00    0.   10.0  284.2    2.0
 09 01 01   1 13   99.5  0.246  1.098  0.016  474.  292.    -13.2
0.08   0.90   0.21    2.36  343.   10.0  286.4    2.0
 09 01 01   1 14   18.6  0.218  0.631  0.016  480.  244.    -49.3
0.08   0.90   0.22    2.36  309.   10.0  287.5    2.0
 09 01 01   1 15   11.9  0.220  0.546  0.015  484.  248.    -79.7
0.04   0.90   0.25    2.86    2.   10.0  288.1    2.0
 09 01 01   1 16   10.5  0.290  0.524  0.015  487.  374.   -206.2
0.08   0.90   0.33    3.36  354.   10.0  288.1    2.0
 09 01 01   1 17  -10.7  0.221 -9.000 -9.000 -999.  251.     89.5
0.04   0.90   0.57    3.36   41.   10.0  287.1    2.0
 09 01 01   1 18   -3.7  0.073 -9.000 -9.000 -999.   72.      9.5
0.08   0.90   1.00    1.76  357.   10.0  286.1    2.0
 09 01 01   1 19 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0
0.07   0.90   1.00    0.00    0.   10.0  285.1    2.0
 09 01 01   1 20 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0
0.07   0.90   1.00    0.00    0.   10.0  285.1    2.0
 09 01 01   1 21 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0
0.07   0.90   1.00    0.00    0.   10.0  285.1    2.0
 09 01 01   1 22 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0
0.07   0.90   1.00    0.00    0.   10.0  284.1    2.0
 09 01 01   1 23   -5.6  0.077 -9.000 -9.000 -999.   51.      7.2
0.10   0.90   1.00    1.76  180.   10.0  282.1    2.0
 09 01 01   1 24 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0
0.07   0.90   1.00    0.00    0.   10.0  283.1    2.0


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 09 01 01 01   10.0 1  271.    1.76   282.1   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
```

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE PERIOD (43872 HRS) AVERAGE
CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S):
FLARE , LANDFILL ,

*** NETWORK ID: UCART1 ; NETWORK
TYPE: GRIDCART ***

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

Y-COORD (METERS)	X-COORD (METERS)				
	533182.89	533282.89	533382.89	533482.89	533582.89
533682.89	533782.89	533882.89	533982.89		
4312557.16	0.43260	0.52241	0.67496	0.58193	0.37252
0.29401	0.34444	0.44980	0.58976		
4312457.16	0.41668	0.50744	0.66323	0.67578	0.49917
0.38275	0.36984	0.45494	0.58743		
4312357.16	0.39669	0.47584	0.59153	0.76672	0.69614
0.57245	0.50034	0.45537	0.57853		
4312257.16	0.36999	0.42943	0.52128	0.67893	0.87820
0.95793	0.66324	0.56312	0.56364		
4312157.16	0.36176	0.39681	0.46392	0.57536	0.73605
0.92663	1.28656	0.78738	0.55862		
4312057.16	0.35064	0.37713	0.43394	0.51378	0.61983
0.78364	1.06761	1.20940	0.62316		
4311957.16	0.32747	0.36800	0.41542	0.48376	0.57537
0.70338	0.89982	1.37758	0.94512		
4311857.16	0.32102	0.36005	0.40663	0.46951	0.55181
0.66320	0.82399	1.07707	1.68043		
4311757.16	0.31898	0.35651	0.40332	0.46333	0.54140
0.64486	0.78835	0.99696	1.32427		
4311657.16	0.30839	0.34364	0.38580	0.43751	0.50303
0.58765	0.70149	0.86243	1.10444		
4311557.16	0.27493	0.30187	0.33323	0.37103	0.41853
0.48072	0.56761	0.69472	0.88985		
4311457.16	0.22643	0.24614	0.27123	0.30384	

```
0.34705      0.40587      0.49071      0.61378      0.80782
  4311357.16 |       0.19371      0.21505      0.24321      0.28054
0.32953      0.39171      0.48234      0.62126      0.83531
  4311257.16 |       0.18682      0.21186      0.24257      0.28094
0.33156      0.40274      0.50216      0.64533      0.84548
  4311157.16 |       0.19074      0.21474      0.24505      0.28531
0.34200      0.42036      0.51784      0.64316      0.85518
  4311057.16 |       0.19141      0.21669      0.25104      0.29830
0.35865      0.42809      0.51054      0.64001      0.90960
  4310957.16 |       0.19497      0.22518      0.26471      0.31132
0.36143      0.41911      0.50524      0.67084      1.00445
  4310857.16 |       0.20504      0.23789      0.27394      0.31079
0.35212      0.41277      0.52318      0.73394      1.10115
  4310757.16 |       0.21515      0.24342      0.27099      0.30169
0.34628      0.42341      0.56375      0.80735      1.17389
  4310657.16 |       0.21728      0.23916      0.26282      0.29578
0.35231      0.45006      0.61667      0.87260      1.20284
  4310557.16 |       0.21230      0.23065      0.25649      0.29911
0.37055      0.48799      0.67204      0.91995      1.20098
```

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE PERIOD (43872 HRS) AVERAGE
CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S):
FLARE , LANDFILL ,

*** NETWORK ID: UCART1 ; NETWORK
TYPE: GRIDCART ***

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

Y-COORD (METERS)	X-COORD (METERS)				
	534082.89	534182.89	534282.89	534382.89	534482.89
534582.89	534682.89	534782.89	534882.89		
4312557.16	0.75534	0.96980	1.16063	1.27875	1.23749
1.01990	0.76038	0.49678	0.27185		
4312457.16	0.76702	1.00382	1.22817	1.34936	1.41887
1.25145	0.94448	0.61240	0.31434		
4312357.16	0.77853	1.05146	1.31146	1.47148	1.57798
1.52200	1.25014	0.77969	0.37287		
4312257.16	0.77374	1.07747	1.43592	1.69107	1.83924
1.84296	1.64593	1.03738	0.44336		
4312157.16	0.75203	1.10364	1.60554	1.99401	2.14963
2.35958	2.25023	1.47816	0.55329		
4312057.16	0.71481	1.10755	1.82740	2.59656	2.95450
3.51047	3.43188	3.06556	0.87016		
4311957.16	0.81987	1.10870	2.16076	4.17231	5.78081
7.65047	8.11861	12.20015	3.03806		
4311857.16	1.57572	1.58967	3.01989	9.66158	28.57627
33.65115	27.58031	13.98861	8.01898		
4311757.16	1.99230	3.68310	6.02981	27.77799	51.65226
50.74118	46.41490	22.77111	19.76514		
4311657.16	1.52439	2.26358	4.29088	16.62101	56.97501
77.05740	26.27761	18.15852	11.38034		
4311557.16	1.20976	1.81200	3.57188	11.48901	30.64777
51.95310	25.80888	15.43692	12.68538		
4311457.16	1.14671	1.81543	3.89277	9.09014	

```
16.90450     23.77005     15.51295     12.45053     11.68567
  4311357.16 |       1.17926      1.98901      4.06334      7.33955
10.92136     12.20855     10.86811     10.60190      6.75141
  4311257.16 |       1.22416      2.16454      3.93529      5.93190
7.53830      8.02056      8.42059      7.65029      7.66475
  4311157.16 |       1.32730      2.29627      3.63650      4.82167
5.54804      5.89288      6.16168      5.78758      5.17386
  4311057.16 |       1.46325      2.34625      3.30295      3.97738
4.39509      4.55280      4.83911      5.24160      5.31371
  4310957.16 |       1.57231      2.28613      2.89215      3.31555
3.58705      3.66053      3.81095      3.97388      4.32734
  4310857.16 |       1.61934      2.14624      2.52375      2.79627
2.96119      3.03177      3.14065      3.28275      3.31040
  4310757.16 |       1.60486      1.97369      2.21330      2.39071
2.49500      2.59084      2.66021      2.74304      2.67436
  4310657.16 |       1.53697      1.78270      1.94051      2.06775
2.17402      2.23021      2.26099      2.32597      2.27913
  4310557.16 |       1.44869      1.60843      1.71756      1.80886
1.89701      1.94259      1.94622      2.00557      1.98711
```

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE PERIOD (43872 HRS) AVERAGE
CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S):
FLARE , LANDFILL ,

*** NETWORK ID: UCART1 ; NETWORK
TYPE: GRIDCART ***

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

Y-COORD (METERS)	X-COORD (METERS)		
	534982.89	535082.89	535182.89
4312557.16	0.17208	0.12236	0.09334
4312457.16	0.19570	0.13629	0.11122
4312357.16	0.21942	0.16008	0.14393
4312257.16	0.24945	0.19450	0.18114
4312157.16	0.29191	0.24451	0.22282
4312057.16	0.45691	0.36677	0.28057
4311957.16	1.22399	0.99240	0.40864
4311857.16	5.22800	2.08049	1.17092
4311757.16	12.09193	4.78300	2.99547
4311657.16	7.40728	4.62928	1.94842
4311557.16	7.87006	4.42666	3.69347
4311457.16	5.10588	3.76162	5.32774
4311357.16	4.21996	3.60798	4.90165
4311257.16	6.18581	3.41441	3.82510
4311157.16	4.96102	4.49022	3.17698
4311057.16	4.55998	3.24152	2.89785
4310957.16	3.30328	2.81484	2.49211
4310857.16	2.84129	2.46999	2.28015
4310757.16	2.49089	2.25195	2.08278
4310657.16	2.18751	2.08168	1.85466
4310557.16	1.97415	1.85375	1.69849

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE PERIOD (43872 HRS) AVERAGE
CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S):
FLARE , LANDFILL ,

*** DISCRETE CARTESIAN
RECEPTOR POINTS ***

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

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
533957.00	4311882.00	1.60025	533711.00	4311848.00	0.70018
534870.00	4311815.00	9.18511	534770.00	4311705.00	22.01448
534670.00	4311412.00	13.53166	534508.00	4311155.00	5.63876
534370.00	4311299.00	6.16616	534330.00	4311410.00	5.74462
534280.00	4311755.00	6.88881	534761.00	4311925.00	14.10511
534836.67	4311778.33	16.81126	534803.33	4311741.67	18.98947
534755.71	4311663.14	21.28605	534741.43	4311621.29	20.82644
534727.14	4311579.43	19.95268	534712.86	4311537.57	19.04062
534698.57	4311495.71	17.27284	534684.29	4311453.86	15.23500
534646.86	4311375.29	12.15229	534623.71	4311338.57	10.73388
534600.57	4311301.86	9.39044	534577.43	4311265.14	8.22761
534554.29	4311228.43	7.22323	534531.14	4311191.71	6.37249
534473.50	4311191.00	6.02386	534439.00	4311227.00	6.37220

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         534404.50    4311263.00        6.42408
534356.67    4311336.00        6.18736
         534343.33    4311373.00        6.06715
534322.86    4311459.29        5.54394
         534315.71    4311508.57        5.12316
534308.57    4311557.86        4.64825
         534301.43    4311607.14        4.49161
534294.29    4311656.43        4.92998
         534287.14    4311705.71        6.01303
534323.73    4311770.45        9.48156
         534367.45    4311785.91       24.52414
534411.18    4311801.36       40.46000
         534454.91    4311816.82       47.21538
534498.64    4311832.27       46.31988
         534542.36    4311847.73       39.60088
534586.09    4311863.18       34.09789
         534629.82    4311878.64       28.55017
534673.55    4311894.09       29.36575
         534717.27    4311909.55       22.52294
534788.25    4311897.50       15.12788
         534815.50    4311870.00       17.04905
534842.75    4311842.50        7.38151
```

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE 1ST HIGHEST 1-HR AVERAGE
CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S):
FLARE , LANDFILL ,

*** NETWORK ID: UCART1 ; NETWORK
TYPE: GRIDCART ***

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

Y-COORD (METERS)	X-COORD (METERS)				
	533182.89	533282.89	533382.89	533482.89	533582.89
4312557.2	95.82924 (09011521)	109.74547 (09011521)	139.77928 (12021601)	86.70485 (12011820)	34.02986 (12020104)
4312457.2	99.80844 (12120723)	104.99701 (10122619)	148.33015 (09011521)	123.70248 (10012207)	56.43805 (12120723)
4312357.2	101.69060 (13122519)	110.78313 (12120723)	126.70449 (09121721)	160.99378 (09011521)	106.07451 (12012007)
4312257.2	100.18545 (13122519)	113.99051 (13122519)	119.97475 (13122519)	147.20045 (12120723)	178.71510 (09121721)
4312157.2	110.20671 (12021118)	110.08563 (12021118)	113.53673 (13122519)	134.09869 (13122519)	149.22953 (13122519)
4312057.2	116.43363 (12022524)	121.34370 (12022524)	129.82595 (12021118)	137.74915 (12021118)	139.02474 (12021118)
4311957.2	119.16553 (11120221)	126.78975 (11120221)	132.73193 (11120221)	144.35173 (12022524)	157.32074 (12022524)
4311857.2	121.74095 (09020808)	129.28994 (09020808)	136.92238 (09020808)	144.55506 (09020808)	160.02451 (11120221)
4311757.2	124.72598 (12010722)	134.49662 (12010722)	145.47008 (12010722)	157.83320 (12010722)	171.80461 (12010722)
4311657.2	128.50280 (09020407)	138.35284 (09020407)	149.31421 (09020407)	162.01116 (11120201)	177.01867 (11120201)
4311557.2	129.14350 (13122902)	140.81003 (13122902)	152.30404 (13122902)	163.04871 (13122902)	182.66723 (10010420)
4311457.2	131.08167 (10010420)	138.30133 (10010420)			

```
142.29508 (10010420)    142.09786 (10010420)    148.55702 (10012904)
 4311357.2 |     91.63279 (10010420)    113.54595 (10012904)
136.86699 (10012904)    152.76719 (10012904)    173.15776 (13010308)
 4311257.2 |    118.21159 (10012904)    130.91480 (13010308)
138.97423 (13010308)    162.46048 (12010724)    176.59081 (12010724)
 4311157.2 |    114.05735 (12010724)    136.40910 (12010724)
144.38981 (12010724)    145.99733 (12012601)    192.84525 (12020524)
 4311057.2 |    121.03669 (12010724)    121.63555 (12012601)
143.21016 (12020524)    188.22875 (12020524)    203.28814 (12020318)
 4310957.2 |    109.86137 (12121118)    150.10854 (12020524)
169.82558 (12020524)    183.28956 (11120503)    167.87362 (11120503)
 4310857.2 |    145.22128 (12020524)    153.28226 (12020318)
162.28227 (11120503)    134.95650 (11120503)    169.34022 (10022103)
 4310757.2 |    140.15769 (11120503)    140.33956 (11120503)
125.77176 (10022103)    151.47146 (10022103)    142.89153 (13022320)
 4310657.2 |    119.40229 (11120503)    118.75083 (10022103)
136.02731 (10022103)    125.80890 (13022320)    163.79502 (13022320)
 4310557.2 |    111.73752 (10022103)    122.67068 (10022103)
111.60745 (13022320)    147.84232 (13022320)    153.05035 (12121719)
```

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE 1ST HIGHEST 1-HR AVERAGE
CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S):
FLARE , LANDFILL ,

*** NETWORK ID: UCART1 ; NETWORK
TYPE: GRIDCART ***

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

Y-COORD (METERS)	X-COORD (METERS)				
	533682.89	533782.89	533882.89	533982.89	534082.89
4312557.2	19.39965 (12120422)	16.83161 (10121817)	18.56547 (11041107)	17.75512 (10122009)	17.31411 (10012409)
4312457.2	25.82073 (11060502)	22.30390 (12120422)	19.73615 (10121817)	20.80244 (11041107)	17.30863 (10122009)
4312357.2	62.56356 (13122519)	41.49571 (11022406)	23.98137 (12120422)	20.48955 (11041107)	22.78203 (10122009)
4312257.2	170.74292 (09011521)	58.02106 (13122519)	34.69992 (11011223)	24.91204 (10121817)	24.13062 (11041107)
4312157.2	166.95609 (12120723)	221.67831 (09011521)	55.99889 (11091801)	29.43335 (10012106)	26.00959 (10121817)
4312057.2	159.62124 (13122519)	179.30230 (13122519)	156.64513 (10122619)	39.20794 (10040607)	29.97358 (10012106)
4311957.2	167.75426 (12021118)	179.85019 (12021118)	230.32897 (13122519)	74.34141 (12041619)	52.66360 (10032507)
4311857.2	177.62984 (11120221)	193.32803 (11120221)	210.12989 (12022524)	256.45654 (12021118)	126.99433 (09062606)
4311757.2	187.59007 (12010722)	205.51853 (12010722)	226.00248 (12010722)	249.65505 (12010722)	280.54263 (12010722)
4311657.2	193.58545 (11120201)	211.65664 (11120201)	242.89613 (13122902)	274.77872 (13122902)	318.61680 (10010420)
4311557.2	202.20808 (10010420)	217.03216 (10010420)	225.02016 (10010420)	268.76215 (10012904)	322.12361 (12010724)
4311457.2	184.83036 (10012904)	214.46675 (13010308)			

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247.97124 (12010724)    289.55429 (12010724)    371.01703 (12020524)
 4311357.2 |    197.91608 (12010724)    222.38957 (12010724)
258.55615 (12020524)    327.13800 (12020524)    334.59140 (11120503)
 4311257.2 |    181.23770 (12121118)    256.83874 (12020524)
285.85280 (11120503)    272.38202 (10022103)    306.59853 (13022320)
 4311157.2 |    228.85165 (12020524)    246.91350 (11120503)
241.28154 (10022103)    259.15645 (13022320)    297.18044 (12121719)
 4311057.2 |    205.90560 (11120503)    213.88269 (10022103)
220.39725 (13022320)    255.49935 (12121719)    249.56969 (11022605)
 4310957.2 |    190.00430 (10022103)    189.04386 (13022320)
225.31682 (13022320)    216.79362 (12121719)    230.17381 (12011602)
 4310857.2 |    163.62364 (13022320)    202.40017 (13022320)
204.22020 (12121719)    206.39716 (09022708)    223.50940 (12011602)
 4310757.2 |    181.91751 (13022320)    188.18560 (12121719)
180.56929 (11022605)    196.60672 (12011602)    190.20616 (10010822)
 4310657.2 |    170.66384 (12121719)    161.49719 (11022605)
167.79821 (09022708)    186.30641 (10010822)    186.99312 (09022002)
 4310557.2 |    138.85889 (11022605)    154.95866 (09022708)
168.40065 (12011602)    157.86731 (10010822)    175.34784 (13010202)
```

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE 1ST HIGHEST 1-HR AVERAGE
CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S):
FLARE , LANDFILL ,

*** NETWORK ID: UCART1 ; NETWORK
TYPE: GRIDCART ***

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

Y-COORD (METERS)	X-COORD (METERS)				
	534182.89	534282.89	534382.89	534482.89	534582.89
4312557.2	27.08035 (10012409)	23.37082 (10012209)	32.52695 (10012817)	26.71075 (12012009)	25.63132 (12012009)
4312457.2	26.21042 (10012409)	23.67346 (10012409)	29.52848 (10012817)	28.53603 (12012009)	28.54868 (12012009)
4312357.2	23.00381 (10012409)	27.65610 (10012409)	26.62936 (10012817)	29.66664 (10012817)	32.30102 (09012409)
4312257.2	23.54900 (10122009)	28.97293 (10012409)	25.88525 (10010809)	34.95196 (10012817)	37.87593 (09012409)
4312157.2	29.03632 (10122009)	28.61602 (10012409)	29.38819 (09020517)	38.01288 (10012817)	46.68905 (09012409)
4312057.2	27.50387 (09021618)	34.29739 (10122009)	39.07277 (10012409)	50.55532 (10012817)	59.40257 (09012409)
4311957.2	37.75808 (10012106)	42.93755 (11041107)	62.16769 (10012409)	90.04924 (12012217)	169.53060 (13122519)
4311857.2	133.99646 (09120302)	150.95804 (09120302)	118.31109 (11021319)	235.39868 (09101101)	393.63487 (13111524)
4311757.2	404.98924 (09020407)	352.75906 (11120201)	420.16480 (12111204)	342.67596 (10111221)	300.43529 (09102819)
4311657.2	347.18400 (10010420)	430.63610 (13010308)	469.41967 (10042201)	390.62325 (12091419)	381.70853 (11101119)
4311557.2	386.59078 (12010724)	471.24060 (12020318)	447.48200 (11032806)	409.95117 (12042902)	475.34661 (13032302)
4311457.2	416.51268 (11120503)	418.24719 (13022320)			

394.89435 (11022605)   372.72580 (13010202)   445.90327 (13122720)
 4311357.2 | 362.23763 (13022320)   374.67007 (12121719)
367.47942 (10010822)   343.41984 (10011605)   310.04696 (13020321)
 4311257.2 | 338.58509 (12121719)   334.65061 (12011602)
329.17199 (13010202)   314.50081 (13121003)   273.52625 (13022422)
 4311157.2 | 287.30029 (09022708)   294.05698 (10010822)
296.48823 (09012707)   285.40465 (11012121)   243.36503 (13022422)
 4311057.2 | 274.65303 (12011602)   273.35619 (13010202)
267.16742 (10011605)   260.18673 (12020922)   218.15822 (11121901)
 4310957.2 | 234.12073 (10010822)   237.55604 (09012707)
241.87550 (13120921)   237.49774 (13012623)   196.36375 (11121901)
 4310857.2 | 224.61444 (09022002)   225.94224 (09012707)
222.87934 (13120921)   217.78101 (13012623)   179.49076 (12012703)
 4310757.2 | 203.31008 (13010202)   204.89183 (12122319)
204.22606 (13011101)   199.60235 (13012623)   165.91169 (12012703)
 4310657.2 | 181.36382 (09012707)   189.59278 (10011605)
188.10955 (13121003)   183.68079 (13122204)   153.94370 (12012703)
 4310557.2 | 176.08901 (09012707)   170.72153 (10011605)
174.61293 (13121003)   170.99480 (13122204)   143.33972 (12012703)

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE 1ST HIGHEST 1-HR AVERAGE
CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S):
FLARE , LANDFILL ,

*** NETWORK ID: UCART1 ; NETWORK
TYPE: GRIDCART ***

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

Y-COORD (METERS)	X-COORD (METERS)				
	534682.89	534782.89	534882.89	534982.89	535082.89
4312557.2	27.89781 (09012409)	18.59812 (10012509)	16.52715 (10121409)	27.32436 (10121409)	20.07801 (10121409)
4312457.2	29.20285 (09012409)	19.32183 (10012509)	26.17981 (10121409)	30.46576 (10121409)	18.73281 (11013017)
4312357.2	31.70423 (09012409)	21.90616 (10121409)	34.71314 (10121409)	24.35535 (11013017)	17.71308 (11060320)
4312257.2	33.04588 (09012409)	35.03277 (10121409)	37.79341 (10121409)	20.48144 (09121521)	25.81112 (11012517)
4312157.2	35.68148 (09012409)	45.21384 (10121409)	31.76214 (11013017)	27.45716 (11060419)	43.18619 (12122109)
4312057.2	56.75777 (10121409)	65.92461 (10121409)	53.48127 (11012517)	59.09696 (12122109)	36.59057 (10030918)
4311957.2	116.92256 (10121409)	164.94309 (11012517)	306.87038 (09123107)	212.43564 (11011221)	231.59750 (09021608)
4311857.2	457.16252 (09042604)	552.57650 (09032324)	398.63524 (12122201)	318.69888 (09121723)	254.28790 (09021107)
4311757.2	482.73822 (10042424)	428.25766 (12011622)	302.01572 (09021901)	347.67243 (09021901)	135.60172 (09010101)
4311657.2	281.85360 (09021901)	285.41749 (13011419)	115.87183 (13022222)	330.21605 (13120902)	215.37451 (13022108)
4311557.2	359.79104 (12041423)	304.43484 (10020723)	276.29699 (13122824)	155.46752 (09010417)	159.15619 (12121722)
4311457.2	320.22096 (13120902)	292.29404 (10022802)			

```
327.94154 (11120921)     80.81237 (10121509)    185.27729 (10011324)
 4311357.2 |    291.89304 (13120824)    295.55416 (12011506)
159.87648 (10120904)     75.64848 (12121709)     81.71560 (13022801)
 4311257.2 |    261.26140 (13122108)    236.87834 (13122107)
295.86810 (11121220)    252.13523 (12120908)     99.74440 (10021420)
 4311157.2 |    233.41527 (10021804)    220.25781 (11010221)
206.17949 (13120907)    224.23244 (12123124)    220.63237 (12120908)
 4311057.2 |    209.37455 (11122603)    211.31104 (13011403)
246.96370 (10022203)    229.94586 (11010923)    163.84824 (11121220)
 4310957.2 |    188.71235 (13020219)    181.54993 (13020802)
207.10840 (11010221)    162.91382 (10011324)    152.72150 (13120902)
 4310857.2 |    172.39929 (13122720)    165.88926 (12122324)
160.52077 (11012207)    150.57996 (11120520)    143.27315 (13120907)
 4310757.2 |    156.26979 (13122720)    152.40187 (11012205)
146.19983 (13122201)    140.05775 (11010221)    133.26030 (10022203)
 4310657.2 |    142.58868 (13020321)    140.25657 (11122603)
135.50415 (13020802)    130.20029 (11012207)    125.06002 (11012208)
 4310557.2 |    133.15373 (13020321)    129.62649 (13020219)
126.20864 (12122324)    121.90829 (13011403)    117.12979 (11010221)
```

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE 1ST HIGHEST 1-HR AVERAGE
CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S):
FLARE , LANDFILL ,

*** NETWORK ID: UCART1 ; NETWORK
TYPE: GRIDCART ***

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

Y-COORD (METERS)	X-COORD (METERS)
	535182.89
4312557.2	15.27075 (11013017)
4312457.2	15.47157 (11060320)
4312357.2	31.81391 (11012517)
4312257.2	43.97853 (12122109)
4312157.2	38.76088 (10030918)
4312057.2	42.02296 (09021604)
4311957.2	42.40458 (13020217)
4311857.2	140.03483 (10051721)
4311757.2	132.10586 (09010101)
4311657.2	68.62952 (09010609)
4311557.2	97.06440 (13020721)
4311457.2	241.06376 (09013120)
4311357.2	239.00236 (13122222)
4311257.2	176.80299 (13122106)
4311157.2	162.09385 (10022802)
4311057.2	153.34158 (13010708)
4310957.2	143.73260 (12123124)
4310857.2	135.99474 (13120902)
4310757.2	127.37185 (11020324)
4310657.2	119.59489 (10011324)
4310557.2	112.38984 (10022203)

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE 1ST HIGHEST 1-HR AVERAGE
CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S):
FLARE , LANDFILL ,

*** DISCRETE CARTESIAN
RECEPTOR POINTS ***

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

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
533957.00	4311882.00	253.75154	(12021118)	533711.00	4311848.00	182.05187	(11120221)
534870.00	4311815.00	487.66158	(13022601)	534770.00	4311705.00	329.92961	(13011419)
534670.00	4311412.00	310.50787	(11120520)	534508.00	4311155.00	282.69487	(13012623)
534370.00	4311299.00	340.21142	(09022002)	534330.00	4311410.00	394.25485	(12121719)
534280.00	4311755.00	452.51611	(09020407)	534761.00	4311925.00	650.97427	(13122122)
534836.67	4311778.33	362.45576	(11121521)	534803.33	4311741.67	335.30296	(09021901)
534755.71	4311663.14	300.42878	(09021901)	534741.43	4311621.29	313.94971	(13010203)
534727.14	4311579.43	323.77005	(11010518)	534712.86	4311537.57	325.34261	(12010506)
534698.57	4311495.71	323.13847	(13121002)	534684.29	4311453.86	319.10752	(13120902)
534646.86	4311375.29	304.95184	(13011403)	534623.71	4311338.57	296.91821	(11012205)
534600.57	4311301.86	287.89701	(13122720)	534577.43	4311265.14	277.59676	(13022422)
534554.29	4311228.43	286.97143	(12012703)	534531.14	4311191.71	290.72593	(13122204)
534473.50	4311191.00	297.07728	(13121003)	534439.00	4311227.00	310.66168	(10011605)

534404.50 4311263.00 323.72764 (09012707)
534356.67 4311336.00 364.53482 (12011602)
534343.33 4311373.00 367.72275 (12011602)
534322.86 4311459.29 430.55915 (13022320)
534315.71 4311508.57 438.39909 (10022103)
534308.57 4311557.86 480.20326 (11120503)
534301.43 4311607.14 451.91200 (12020524)
534294.29 4311656.43 463.38687 (12010724)
534287.14 4311705.71 481.09011 (10010420)
534323.73 4311770.45 326.05244 (11120201)
534367.45 4311785.91 460.54841 (13010504)
534411.18 4311801.36 445.54455 (10071105)
534454.91 4311816.82 441.12528 (09072504)
534498.64 4311832.27 404.96676 (12082505)
534542.36 4311847.73 397.17439 (13110624)
534586.09 4311863.18 417.56579 (13111524)
534629.82 4311878.64 427.36287 (11040203)
534673.55 4311894.09 558.08489 (11012302)
534717.27 4311909.55 628.35944 (09022805)
534788.25 4311897.50 689.62089 (12022120)
534815.50 4311870.00 678.78553 (10122322)
534842.75 4311842.50 553.05163 (13122123)

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE SUMMARY OF MAXIMUM
PERIOD (43872 HRS) RESULTS ***

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

NETWORK GROUP ID		AVERAGE CONC			RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	GRID-ID
ALL	1ST HIGHEST VALUE IS	77.05740	AT	(534582.89, 4311657.16, 522.30, 655.00, 0.00)	GC	UCART1
	2ND HIGHEST VALUE IS	56.97501	AT	(534482.89, 4311657.16, 491.70, 655.00, 0.00)	GC	UCART1
	3RD HIGHEST VALUE IS	51.95310	AT	(534582.89, 4311557.16, 523.40, 655.00, 0.00)	GC	UCART1
	4TH HIGHEST VALUE IS	51.65226	AT	(534482.89, 4311757.16, 501.30, 655.00, 0.00)	GC	UCART1
	5TH HIGHEST VALUE IS	50.74118	AT	(534582.89, 4311757.16, 498.30, 655.00, 0.00)	GC	UCART1
	6TH HIGHEST VALUE IS	47.21538	AT	(534454.91, 4311816.82, 521.13, 655.00, 0.00)	DC	
	7TH HIGHEST VALUE IS	46.41490	AT	(534682.89, 4311757.16, 521.30, 655.00, 0.00)	GC	UCART1
	8TH HIGHEST VALUE IS	46.31988	AT	(534498.64, 4311832.27, 519.70, 655.00, 0.00)	DC	
	9TH HIGHEST VALUE IS	40.46000	AT	(534411.18, 4311801.36, 522.74, 655.00, 0.00)	DC	
	10TH HIGHEST VALUE IS	39.60088	AT	(534542.36, 4311847.73, 517.94, 655.00, 0.00)	DC	

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

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

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

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

NETWORK GROUP ID	AVERAGE CONC	DATE (YYMMDDHH)	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	GRID-ID
ALL	HIGH 1ST HIGH VALUE IS	689.62089	ON 12022120: AT (534788.25, 4311897.50, 522.79, 655.00, 0.00)	DC	

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

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

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

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

A Total of   0 Fatal Error Message(s)
A Total of   0 Warning Message(s)
A Total of   25405 Informational Message(s)

A Total of   43872 Hours Were Processed

A Total of   23161 Calm Hours Identified

A Total of   2244 Missing Hours Identified (5.11 Percent)

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

******** WARNING MESSAGES ********
*** NONE ***

****
*** AERMOD Finishes Successfully ***
****

2B. Health Risk Assessment Tables

Table 2.1
Cancer Risk- Worker
Eastlake Landfill- Clear Lake, California

MICRw [1] = SUM [CP * Qtpy * X/Q * MWAF * CEFw * MPw * WAF * 10-6] =

Eastlake Sanitary Landfill Cancer Risk **2.80E-07**

Dispersion Factor (X/Q) [2] =	**0.70**
CEF [3] =	**55.86**
WAF [4] =	**4.2**

Volatile Carcinogens	CAS	MWAF [5] =	Qtpy	CP [6]	MPw [7]	MICR
1,1,2,2-Tetrachloroethane	79-34-5	1.00E+00	3.68E-04	2.00E-01	1.0	1.21E-08
1,1-Dichloroethane (ethylidene dichloride)	75-34-3	1.00E+00	2.30E-03	5.70E-03	1.0	2.15E-09
1,1-Dichloroethene (vinylidene chloride)	75-35-4	1.00E+00	2.79E-04	2.70E-01	1.0	1.24E-08
1,2-Dichloroethane (ethylene dichloride)	107-06-2	1.00E+00	3.72E-04	7.20E-02	1.0	4.40E-09
Acrylonitrile	107-13-1	1.00E+00	4.82E-05	1.00E+00	1.0	7.91E-09
Benzene	71-43-2	1.00E+00	1.91E-03	1.00E-01	1.0	3.14E-08
Carbon tetrachloride	56-23-5	1.00E+00	3.37E-05	1.50E-01	1.0	8.31E-10
Chloroform	67-66-3	1.00E+00	7.85E-05	1.90E-02	1.0	2.45E-10
Dichlorobenzene (1,4-Dichlorobenzene)	106-46-7	1.00E+00	7.40E-03	4.00E-02	1.0	4.86E-08
Dichloromethane (methylene chloride)	75-09-2	1.00E+00	9.03E-03	3.50E-03	1.0	5.19E-09
Ethylbenzene	100-41-4	1.00E+00	1.82E-02	8.70E-03	1.0	2.60E-08
Ethylene dibromide (1,2-Dibromoethane)	106-93-4	1.00E+00	2.71E-04	2.50E-01	1.0	1.11E-08
Perchloroethylene (tetrachloroethylene)	127-18-4	1.00E+00	6.19E-03	2.10E-02	1.0	2.14E-08
Trichloroethylene (trichloroethene)	79-01-6	1.00E+00	2.80E-03	7.00E-03	1.0	3.22E-09
Vinyl chloride	75-01-4	1.00E+00	2.11E-03	2.70E-01	1.0	9.35E-08
					Total	**2.80E-07**

Notes:

[1] SCAQMD Risk Assessment Procedures for Rules 1401 and 212, Version 8.1, Revised September 1, 2017, Tier 2 Screening Risk Assessment, Instructions for Calculating MICR, Page 12.

[2] AERMOD dispersion modeling results for annual concentration at residential receptor UTM coordinates (533710,4311848).

[3] SCAQMD Permit Application Package N, Version 8.1, page 16. Combined exposure factor for 25 years, Table 4.2D.

[4] SCAQMD Permit Application Package N, Version 8.1, page 18. Worker adjustment factor for operating 8 hours per day, five days per week, Table 5.1.

[5] https://www.arb.ca.gov/toxics/healthval/contable.pdf, Table 1- *Consolidated table of OEHHA/ARB approved risk assessment health values* , "Molecular weight adjustment factor."

[6] https://www.arb.ca.gov/toxics/healthval/contable.pdf, Table 1- *Consolidated table of OEHHA/ARB approved risk assessment health values* , "Cancer potency factor."

[7] SCAQMD Permit Application Package N, Version 8.1, page 10. Multipathway adjustment factors- Cancer, Table 3.1. No value tabulated, therefore assumed inhalation pathway only.

Table 2.2
Cancer Risk- Residential
Eastlake Landfill- Clear Lake, California

$MICR_R$ [1] = SUM [CP * Qtpy * X/Q * MWAF * CEF_R * MP_R * 10-6] =

Eastlake Sanitary Landfill Cancer Risk **3.82E-06**

Dispersion Factor (X/Q) [2] = **3.3**

CEF [3] = **677.4**

Volatile Carcinogens	CAS	MWAF [4] =	Qtpy	CP [5]	MPw [6]	MICR
1,1,2,2-Tetrachloroethane	79-34-5	1.00E+00	3.68E-04	2.00E-01	1.0	1.64E-07
1,1-Dichloroethane (ethylidene dichloride)	75-34-3	1.00E+00	2.30E-03	5.70E-03	1.0	2.93E-08
1,1-Dichloroethene (vinylidene chloride)	75-35-4	1.00E+00	2.79E-04	2.70E-01	1.0	1.69E-07
1,2-Dichloroethane (ethylene dichloride)	107-06-2	1.00E+00	3.72E-04	7.20E-02	1.0	5.98E-08
Acrylonitrile	107-13-1	1.00E+00	4.82E-05	1.00E+00	1.0	1.08E-07
Benzene	71-43-2	1.00E+00	1.91E-03	1.00E-01	1.0	4.28E-07
Carbon tetrachloride	56-23-5	1.00E+00	3.37E-05	1.50E-01	1.0	1.13E-08
Chloroform	75-45-6	1.00E+00	7.85E-05	1.90E-02	1.0	3.33E-09
Dichlorobenzene (1,4-Dichlorobenzene)	106-46-7	1.00E+00	7.40E-03	4.00E-02	1.0	6.61E-07
Dichloromethane (methylene chloride)	75-09-2	1.00E+00	9.03E-03	3.50E-03	1.0	7.06E-08
Ethylbenzene	100-41-4	1.00E+00	1.82E-02	8.70E-03	1.0	3.53E-07
Ethylene dibromide (1,2-Dibromoethane)	106-93-4	1.00E+00	2.71E-04	2.50E-01	1.0	1.51E-07
Perchloroethylene (tetrachloroethylene)	127-18-4	1.00E+00	6.19E-03	2.10E-02	1.0	2.91E-07
Trichloroethylene (trichloroethene)	108-88-3	1.00E+00	2.80E-03	7.00E-03	1.0	4.38E-08
Vinyl chloride	79-01-6	1.00E+00	2.11E-03	2.70E-01	1.0	1.27E-06
					Total	**3.82E-06**

Notes:

[1] SCAQMD Risk Assessment Procedures for Rules 1401 and 212, Version 8.1, Revised September 1, 2017, Tier 2 Screening Risk Assessment, Instructions for Calculating MICR, Page 12.

[2] AERMOD dispersion modeling results for annual concentration at residential receptor UTM coordinates (534283,4311057).

[3] SCAQMD Permit Application Package N, Version 8.1, page 15. Combined exposure factor for 30 years, Table 4.1D.

[4] https://www.arb.ca.gov/toxics/healthval/contable.pdf, Table 1- *Consolidated table of OEHHA/ARB approved risk assessment health values* , "Molecular weight adjustment factor."

[5] https://www.arb.ca.gov/toxics/healthval/contable.pdf, Table 1- *Consolidated table of OEHHA/ARB approved risk assessment health values* , "Cancer potency factor."

[6] SCAQMD Permit Application Package N, Version 8.1, page 10. Multipathway adjustment factors- Cancer, Table 3.1. No value tabulated, therefore assumed inhalation pathway only.

Table 2.3
Chronic Hazard- Worker
Eastlake Landfill- Clear Lake, California

HIC[1] = ENDPOINT SUM [Qtpy * X/Q * MWAF * MP * (1/REL)] =
HIC8[1] = ENDPOINT SUM [Qtpy * X/Q * MWAF * WAF * (1/8-hour REL)] =

TACs	CAS	Hazard Indices- Chronic								
		Nerve	Alimentary	Reproductive	Kidney	Respiratory	Hematologic	Endocrine	Eye	Cardiovascular
1,1,1-Trichloroethane (methyl chloroform)	71-55-6	2.05E-06								
1,1-Dichloroethene (vinylidene chloride)	75-35-4		1.17E-05							
1,2-Dichloroethane (ethylene dichloride)	107-06-2		2.72E-06							
2-Propanol (isopropyl alcohol)	67-63-0			5.68E-06	5.68E-06					
Acrylonitrile	107-13-1					3.19E-05				
Benzene	71-43-2						2.12E-03			
Carbon disulfide	75-15-0	2.55E-06		2.55E-06						
Carbon tetrachloride	56-23-5	2.46E-06	2.46E-06	2.46E-06						
Chlorobenzene	108-90-7		2.34E-06	2.34E-06	2.34E-06					
Chloroethane (ethyl chloride)	75-00-3		4.71E-08	4.71E-08						
Chloroform	67-66-3		7.65E-07	7.65E-07	7.65E-07					
Dichlorobenzene (1,4-Dichlorobenzene)	106-46-7	2.70E-05	2.70E-05		2.70E-05	2.70E-05				
Dichloromethane (methylene chloride)	75-09-2	6.60E-05								6.60E-05
Ethylbenzene	100-41-4		3.01E-05	3.01E-05	3.01E-05			3.01E-05		
Ethylene dibromide (1,2-Dibromoethane)	106-93-4			9.89E-04						
Hexane	110-54-3	2.39E-06								
Mercury (total)(e)	7439-97-6	1.07E-03		1.07E-03	1.07E-03					
Perchloroethylene (tetrachloroethylene)	127-18-4		5.17E-04		5.17E-04					
Trichloroethylene (trichloroethene)	79-01-6	1.37E-05							1.37E-05	
Hydrochloric acid	7647-01-0					8.01E-02				
Toluene	108-88-3	6.52E-04		6.52E-04		6.52E-04				
Xylenes	1330-20-7	2.10E-04				2.10E-04			2.10E-04	
Endpoint Totals		**2.05E-03**	**5.95E-04**	**2.76E-03**	**1.65E-03**	**8.10E-02**	**2.12E-03**	**3.01E-05**	**2.24E-04**	**6.60E-05**

Hazard Indices- Chronic 8hr	8-Hour RELs			Hazard Index- 8 Hour Chronic		
TACs	Nerve	Repro	Kidney	Nerve	Repro	Kidney
Mercury (total)(e)	6.00E-02	6.00E-02	6.00E-02	**0.144**	**0.144**	**0.144**

Dispersion Factor (X/Q) [2] =	**0.70**
Worker Adjustment Factor [3] =	**4.2**

TACs	CAS	Qtpy	MP [4]	MWAF [5]
1,1,1-Trichloroethane (methyl chloroform)	71-55-6	2.93E-03	1.0	1.0
1,1-Dichloroethene (vinylidene chloride)	75-35-4	1.17E-03	1.0	1.0
1,2-Dichloroethane (ethylene dichloride)	107-06-2	1.55E-03	1.0	1.0
2-Propanol (isopropyl alcohol)	67-63-0	5.68E-02	1.0	1.0
Acrylonitrile	107-13-1	2.28E-04	1.0	1.0
Benzene	71-43-2	9.07E-03	1.0	1.0
Carbon disulfide	75-15-0	2.91E-03	1.0	1.0
Carbon tetrachloride	56-23-5	1.41E-04	1.0	1.0
Chlorobenzene	108-90-7	3.34E-03	1.0	1.0
Chloroethane (ethyl chloride)	75-00-3	2.02E-03	1.0	1.0
Chloroform	67-66-3	3.28E-04	1.0	1.0
Dichlorobenzene (1,4-Dichlorobenzene)	106-46-7	3.09E-02	1.0	1.0
Dichloromethane (methylene chloride)	75-09-2	3.77E-02	1.0	1.0
Ethylbenzene	100-41-4	8.61E-02	1.0	1.0
Ethylene dibromide (1,2-Dibromoethane)	106-93-4	1.13E-03	1.0	1.0
Hexane	110-54-3	2.39E-02	1.0	1.0
Mercury (total)(e)	7439-97-6	4.59E-05	1.0	1.0
Perchloroethylene (tetrachloroethylene)	127-18-4	2.59E-02	1.0	1.0
Trichloroethylene (trichloroethene)	79-01-6	1.17E-02	1.0	1.0
Hydrochloric acid	7647-01-0	1.03E+00	1.0	1.0
Toluene	108-88-3	2.80E-01	1.0	1.0
Xylenes	1330-20-7	2.10E-01	1.0	1.0

TACs		RELs [5]								
		Nerve	Alimentary	Reproductive	Kidney	Respiratory	Hematologic	Endocrine	Eye	Cardiovascular
1,1,1-Trichloroethane (methyl chloroform)	71-55-6	1.00E+03								
1,1-Dichloroethene (vinylidene chloride)	75-35-4		7.00E+01							
1,2-Dichloroethane (ethylene dichloride)	107-06-2		4.00E+02							
2-Propanol (isopropyl alcohol)	67-63-0			7.00E+03	7.00E+03					
Acrylonitrile	107-13-1					5.00E+00				
Benzene	71-43-2						3.00E+00			
Carbon disulfide	75-15-0	8.00E+02		8.00E+02						
Carbon tetrachloride	56-23-5	4.00E+01	4.00E+01	4.00E+01						
Chlorobenzene	108-90-7		1.00E+03	1.00E+03	1.00E+03					
Chloroethane (ethyl chloride)	75-00-3		3.00E+04	3.00E+04						
Chloroform	67-66-3		3.00E+02	3.00E+02	3.00E+02					
Dichlorobenzene (1,4-Dichlorobenzene)	106-46-7	8.00E+02	8.00E+02		8.00E+02	8.00E+02				
Dichloromethane (methylene chloride)	75-09-2	4.00E+02								4.00E+02
Ethylbenzene	100-41-4		2.00E+03	2.00E+03	2.00E+03			2.00E+03		
Ethylene dibromide (1,2-Dibromoethane)	106-93-4			8.00E-01						
Hexane	110-54-3	7.00E+03								
Mercury (total)(e)	7439-97-6	3.00E-02		3.00E-02	3.00E-02					
Perchloroethylene (tetrachloroethylene)	127-18-4		3.50E+01		3.50E+01					
Trichloroethylene (trichloroethene)	79-01-6	6.00E+02							6.00E+02	
Hydrochloric acid	7647-01-0					9.00E+00				
Toluene	108-88-3	3.00E+02		3.00E+02		3.00E+02				
Xylenes	1330-20-7	7.00E+02				7.00E+02			7.00E+02	

Notes:

[1] SCAQMD Risk Assessment Procedures for Rules 1401 and 212, Version 8.1, Revised September 1, 2017, Tier 2 Screening Risk Assessment, Instructions for Calculating CHI, Page 19.

[2] AERMOD dispersion modeling results for annual concentration at residential receptor UTM coordinates (533710,4311848).

[3] SCAQMD Permit Application Package N, Version 8.1, page 16. Combined exposure factor for 25 years, Table 4.2D.

[4] SCAQMD Permit Application Package N, Version 8.1, page 10. Multipathway adjustment factors- Chronic HI, Table 3.2. No value tabulated, therefore assumed inhalation pathway only.

[5] https://www.arb.ca.gov/toxics/healthval/contable.pdf, Table 1- "*Consolidated table of OEHHA/ARB approved risk assessment health values.*" https://www.arb.ca.gov/toxics/healthval/totables.pdf, Table 4- "*OEHHA/ARB approved chronic reference exposure levels and target organs.*"

Table 2.4
Chronic Hazard- Residential
Eastlake Landfill- Clear Lake, California

HIC[1] = ENDPOINT SUM [Qtpy * X/Q * MWAF * MP * (1/REL)] =

TACs		Hazard Indices- Chronic								
		Nerve	Alimentary	Reproductive	Kidney	Respiratory	Hematologic	Endocrine	Eye	Cardiovascular
1,1,1-Trichloroethane (methyl chloroform)	71-55-6	9.67E-06								
1,1-Dichloroethene (vinylidene chloride)	75-35-4		5.50E-05							
1,2-Dichloroethane (ethylene dichloride)	107-06-2		1.28E-05							
2-Propanol (isopropyl alcohol)	67-63-0			2.68E-05	2.68E-05					
Acrylonitrile	107-13-1					1.51E-04				
Benzene	71-43-2						9.97E-03			
Carbon disulfide	75-15-0	1.20E-05		1.20E-05						
Carbon tetrachloride	56-23-5	1.16E-05	1.16E-05	1.16E-05						
Chlorobenzene	108-90-7		1.10E-05	1.10E-05	1.10E-05					
Chloroethane (ethyl chloride)	75-00-3		2.22E-07	2.22E-07						
Chloroform	67-66-3		3.61E-06	3.61E-06	3.61E-06					
Dichlorobenzene (1,4-Dichlorobenzene)	106-46-7	1.27E-04	1.27E-04		1.27E-04	1.27E-04				
Dichloromethane (methylene chloride)	75-09-2	3.11E-04								3.11E-04
Ethylbenzene	100-41-4		1.42E-04	1.42E-04	1.42E-04			1.42E-04		
Ethylene dibromide (1,2-Dibromoethane)	106-93-4			4.66E-03						
Hexane	110-54-3	1.13E-05								
Mercury (total)(e)	7439-97-6	5.04E-03		5.04E-03	5.04E-03					
Perchloroethylene (tetrachloroethylene)	127-18-4		2.44E-03		2.44E-03					
Trichloroethylene (trichloroethene)	79-01-6	6.43E-05							6.43E-05	
Hydrochloric acid	7647-01-0					3.77E-01				
Toluene	108-88-3	3.07E-03		3.07E-03		3.07E-03				
Xylenes	1330-20-7	9.91E-04				9.91E-04			9.91E-04	
	Endpoint Totals	**9.66E-03**	**2.80E-03**	**1.30E-02**	**7.79E-03**	**3.82E-01**	**9.97E-03**	**1.42E-04**	**1.06E-03**	**3.11E-04**

Dispersion Factor (X/Q) [2] **=** **3.3**

TACs	CAS	Qtpy	MP [3]	MWAF [4]
1,1,1-Trichloroethane (methyl chloroform)	71-55-6	2.93E-03	1.0	1.0
1,1-Dichloroethene (vinylidene chloride)	75-35-4	1.17E-03	1.0	1.0
1,2-Dichloroethane (ethylene dichloride)	107-06-2	1.55E-03	1.0	1.0
2-Propanol (isopropyl alcohol)	67-63-0	5.68E-02	1.0	1.0
Acrylonitrile	107-13-1	2.28E-04	1.0	1.0
Benzene	71-43-2	9.07E-03	1.0	1.0
Carbon disulfide	75-15-0	2.91E-03	1.0	1.0
Carbon tetrachloride	56-23-5	1.41E-04	1.0	1.0
Chlorobenzene	108-90-7	3.34E-03	1.0	1.0
Chloroethane (ethyl chloride)	75-00-3	2.02E-03	1.0	1.0
Chloroform	67-66-3	3.28E-04	1.0	1.0
Dichlorobenzene (1,4-Dichlorobenzene)	106-46-7	3.09E-02	1.0	1.0
Dichloromethane (methylene chloride)	75-09-2	3.77E-02	1.0	1.0
Ethylbenzene	100-41-4	8.61E-02	1.0	1.0
Ethylene dibromide (1,2-Dibromoethane)	106-93-4	1.13E-03	1.0	1.0
Hexane	110-54-3	2.39E-02	1.0	1.0
Mercury (total)(e)	7439-97-6	4.59E-05	1.0	1.0
Perchloroethylene (tetrachloroethylene)	127-18-4	2.59E-02	1.0	1.0
Trichloroethylene (trichloroethene)	79-01-6	1.17E-02	1.0	1.0
Hydrochloric acid	7647-01-0	1.03E+00	1.0	1.0
Toluene	108-88-3	2.80E-01	1.0	1.0
Xylenes	1330-20-7	2.10E-01	1.0	1.0

TACs		REL [4]								
		Nerve	Alimentary	Reproductive	Kidney	Respiratory	Hematologic	Endocrine	Eye	Cardiovascular
1,1,1-Trichloroethane (methyl chloroform)	71-55-6	1.00E+03								
1,1-Dichloroethene (vinylidene chloride)	75-35-4		7.00E+01							
1,2-Dichloroethane (ethylene dichloride)	107-06-2		4.00E+02							
2-Propanol (isopropyl alcohol)	67-63-0			7.00E+03	7.00E+03					
Acrylonitrile	107-13-1					5.00E+00				
Benzene	71-43-2						3.00E+00			
Carbon disulfide	75-15-0	8.00E+02		8.00E+02						
Carbon tetrachloride	56-23-5	4.00E+01	4.00E+01	4.00E+01						
Chlorobenzene	108-90-7		1.00E+03	1.00E+03	1.00E+03					
Chloroethane (ethyl chloride)	75-00-3		3.00E+04	3.00E+04						
Chloroform	67-66-3		3.00E+02	3.00E+02	3.00E+02					
Dichlorobenzene (1,4-Dichlorobenzene)	106-46-7	8.00E+02	8.00E+02		8.00E+02	8.00E+02				
Dichloromethane (methylene chloride)	75-09-2	4.00E+02								4.00E+02
Ethylbenzene	100-41-4		2.00E+03	2.00E+03	2.00E+03			2.00E+03		
Ethylene dibromide (1,2-Dibromoethane)	106-93-4			8.00E-01						
Hexane	110-54-3	7.00E+03								
Mercury (total)(e)	7439-97-6	3.00E-02		3.00E-02	3.00E-02					
Perchloroethylene (tetrachloroethylene)	127-18-4		3.50E+01		3.50E+01					
Trichloroethylene (trichloroethene)	79-01-6	6.00E+02							6.00E+02	
Hydrochloric acid	7647-01-0					9.00E+00				
Toluene	108-88-3	3.00E+02		3.00E+02		3.00E+02				
Xylenes	1330-20-7	7.00E+02				7.00E+02			7.00E+02	

Notes:

[1] SCAQMD Risk Assessment Procedures for Rules 1401 and 212, Version 8.1, Revised September 1, 2017, Tier 2 Screening Risk Assessment, Instructions for Calculating HIC, Page 19.
[2] AERMOD dispersion modeling results for annual concentration at residential receptor UTM coordinates (534283,4311057).
[3] SCAQMD Permit Application Package N, Version 8.1, page 10. Multipathway adjustment factors- Chronic HI, Table 3.2. No value tabulated, therefore assumed inhalation pathway only.
[4] https://www.arb.ca.gov/toxics/healthval/contable.pdf, Table 1- "*Consolidated table of OEHHA/ARB approved risk assessment health values.*"
https://www.arb.ca.gov/toxics/healthval/totables.pdf, Table 4- "*OEHHA/ARB approved chronic reference exposure levels and target organs.*"

Table 2.5
Acute Hazard- Worker
Eastlake Landfill- Clear Lake, California

AHI[1] = ENDPOINT SUM [Qhr * X/Q * MWAF * (1/REL)] =

TACs	CAS	Hazard Indices- Acute							
		Nerve	Alimentary	Respiratory	Reproductive	Hematologic	Immune	Eye	Cardiovascular
1,1,1-Trichloroethane (methyl chloroform)	71-55-6	2.89E-06							
2-Propanol (isopropyl alcohol)	67-63-0	1.19E-03							
Benzene	71-43-2				2.25E-02	2.25E-02	2.25E-02		
Carbon disulfide	75-15-0	3.15E-05			3.15E-05				
Carbon tetrachloride	56-23-5	4.97E-06	4.97E-06		4.97E-06				
Chloroform	67-66-3	1.47E-04		1.47E-04	1.47E-04				
Dichloromethane (methylene chloride)	75-09-2	1.81E-04							1.81E-04
Mercury (total)(e)	7439-97-6	5.13E-03			5.13E-03				
Methyl ethyl ketone	78-93-3			4.69E-04				4.69E-04	
Perchloroethylene (tetrachloroethylene)	127-18-4	8.68E-05		8.68E-05				8.68E-05	
Vinyl chloride	75-01-4	3.28E-06		3.28E-06				3.28E-06	
Hydrochloric acid	7647-01-0			3.29E-02				3.29E-02	
Toluene	108-88-3	5.07E-04		5.07E-04	5.07E-04			5.07E-04	
Xylenes	1330-20-7	1.26E-03		1.26E-03				1.26E-03	
Endpoint Totals		**8.55E-03**	**4.97E-06**	**3.54E-02**	**2.84E-02**	**2.25E-02**	**2.25E-02**	**3.52E-02**	**1.81E-04**

Dispersion Factor (X/Q) [2] **=**	**294**
Operating Hours per Day	**24**

TACs	CAS	Q (lb/hr)	MWAF [3]
1,1,1-Trichloroethane (methyl chloroform)	71-55-6	6.69E-04	1.0
2-Propanol (isopropyl alcohol)	67-63-0	1.30E-02	1.0
Benzene	71-43-2	2.07E-03	1.0
Carbon disulfide	75-15-0	6.64E-04	1.0
Carbon tetrachloride	56-23-5	3.21E-05	1.0
Chloroform	67-66-3	7.48E-05	1.0
Dichloromethane (methylene chloride)	75-09-2	8.61E-03	1.0
Mercury (total)(e)	7439-97-6	1.05E-05	1.0
Methyl ethyl ketone	78-93-3	2.08E-02	1.0
Perchloroethylene (tetrachloroethylene)	127-18-4	5.91E-03	1.0
Vinyl chloride	75-01-4	2.01E-03	1.0
Hydrochloric acid	7647-01-0	2.35E-01	1.0
Toluene	108-88-3	6.38E-02	1.0
Xylenes	1330-20-7	9.44E-02	1.0

TACs	CAS	REL [3]							
		Nerve	Alimentary	Respiratory	Reproductive	Hematologic	Immune	Eye	Cardiovascular
1,1,1-Trichloroethane (methyl chloroform)	71-55-6	6.80E+04							
2-Propanol (isopropyl alcohol)	67-63-0	3.20E+03							
Benzene	71-43-2				2.70E+01	2.70E+01	2.70E+01		
Carbon disulfide	75-15-0	6.20E+03			6.20E+03				
Carbon tetrachloride	56-23-5	1.90E+03	1.90E+03		1.90E+03				
Chloroform	67-66-3	1.50E+02		1.50E+02	1.50E+02				
Dichloromethane (methylene chloride)	75-09-2	1.40E+04							1.40E+04
Mercury (total)(e)	7439-97-6	6.00E-01			6.00E-01				
Methyl ethyl ketone	78-93-3			1.30E+04				1.30E+04	
Perchloroethylene (tetrachloroethylene)	127-18-4	2.00E+04		2.00E+04				2.00E+04	
Vinyl chloride	75-01-4	1.80E+05		1.80E+05				1.80E+05	
Hydrochloric acid	7647-01-0			2.10E+03				2.10E+03	
Toluene	108-88-3	3.70E+04		3.70E+04	3.70E+04			3.70E+04	
Xylenes	1330-20-7	2.20E+04		2.20E+04				2.20E+04	

Notes:

[1] SCAQMD Risk Assessment Procedures for Rules 1401 and 212, Version 8.1, Revised September 1, 2017, Tier 2 Screening Risk Assessment, Instructions for Calculating AHI.
[2] AERMOD dispersion modeling results for annual concentration at residential receptor UTM coordinates (534283,4311057).
[3] https://www.arb.ca.gov/toxics/healthval/contable.pdf, Table 1- "Consolidated table of OEHHA/ARB approved risk assessment health values."
https://www.arb.ca.gov/toxics/healthval/totables.pdf, Table 4- "OEHHA/ARB approved Acute reference exposure levels and target organs."

Table 2.6
Acute Hazard- Residential
Eastlake Landfill- Clear Lake, California

HIA[1] = ENDPOINT SUM [Qhr * X/Q * MWAF * (1/REL)] =

TACs	CAS	Hazard Indices- Acute							
		Nerve	Alimentary	Respiratory	Reproductive	Hematologic	Immune	Eye	Cardiovascular
1,1,1-Trichloroethane (methyl chloroform)	71-55-6	2.92E-06							
2-Propanol (isopropyl alcohol)	67-63-0	1.20E-03							
Benzene	71-43-2				2.28E-02	2.28E-02	2.28E-02		
Carbon disulfide	75-15-0	3.18E-05			3.18E-05				
Carbon tetrachloride	56-23-5	5.02E-06	5.02E-06		5.02E-06				
Chloroform	67-66-3	1.48E-04		1.48E-04	1.48E-04				
Dichloromethane (methylene chloride)	75-09-2	1.83E-04							1.83E-04
Mercury (total)(e)	7439-97-6	5.18E-03			5.18E-03				
Methyl ethyl ketone	78-93-3			4.74E-04				4.74E-04	
Perchloroethylene (tetrachloroethylene)	127-18-4	8.77E-05		8.77E-05				8.77E-05	
Vinyl chloride	75-01-4	3.32E-06		3.32E-06				3.32E-06	
Hydrochloric acid	7647-01-0			3.32E-02					
Toluene	108-88-3	5.12E-04		5.12E-04	5.12E-04				
Xylenes	1330-20-7	1.27E-03		1.27E-03					
Endpoint Totals		**8.63E-03**	**5.02E-06**	**3.57E-02**	**2.87E-02**	**2.28E-02**	**2.28E-02**	**5.65E-04**	**1.83E-04**

Dispersion Factor (X/Q) [2] **=** **297**

TACs	CAS	Q (lbs/hour)	MWAF [3]
1,1,1-Trichloroethane (methyl chloroform)	71-55-6	6.69E-04	1.0
2-Propanol (isopropyl alcohol)	67-63-0	1.30E-02	1.0
Benzene	71-43-2	2.07E-03	1.0
Carbon disulfide	75-15-0	6.64E-04	1.0
Carbon tetrachloride	56-23-5	3.21E-05	1.0
Chloroform	67-66-3	7.48E-05	1.0
Dichloromethane (methylene chloride)	75-09-2	8.61E-03	1.0
Mercury (total)(e)	7439-97-6	1.05E-05	1.0
Methyl ethyl ketone	78-93-3	2.08E-02	1.0
Perchloroethylene (tetrachloroethylene)	127-18-4	5.91E-03	1.0
Vinyl chloride	75-01-4	2.01E-03	1.0
Hydrochloric acid	7647-01-0	2.35E-01	1.0
Toluene	108-88-3	6.38E-02	1.0
Xylenes	1330-20-7	9.44E-02	1.0

TACs	CAS	REL [3]							
		Nerve	Alimentary	Respiratory	Reproductive	Hematologic	Immune	Eye	Cardiovascular
1,1,1-Trichloroethane (methyl chloroform)	71-55-6	6.80E+04							
2-Propanol (isopropyl alcohol)	67-63-0	3.20E+03							
Benzene	71-43-2				2.70E+01	2.70E+01	2.70E+01		
Carbon disulfide	75-15-0	6.20E+03			6.20E+03				
Carbon tetrachloride	56-23-5	1.90E+03	1.90E+03		1.90E+03				
Chloroform	67-66-3	1.50E+02		1.50E+02	1.50E+02				
Dichloromethane (methylene chloride)	75-09-2	1.40E+04							1.40E+04
Mercury (total)(e)	7439-97-6	6.00E-01			6.00E-01				
Methyl ethyl ketone	78-93-3			1.30E+04				1.30E+04	
Perchloroethylene (tetrachloroethylene)	127-18-4	2.00E+04		2.00E+04				2.00E+04	
Vinyl chloride	75-01-4	1.80E+05		1.80E+05				1.80E+05	
Hydrochloric acid	7647-01-0			2.10E+03				2.10E+03	
Toluene	108-88-3	3.70E+04		3.70E+04	3.70E+04			3.70E+04	
Xylenes	1330-20-7	2.20E+04		2.20E+04				2.20E+04	

Notes:

[1] SCAQMD Risk Assessment Procedures for Rules 1401 and 212, Version 8.1, Revised September 1, 2017, Tier 2 Screening Risk Assessment, Instructions for Calculating AHI.

[2] AERMOD dispersion modeling results for annual concentration at residential receptor UTM coordinates (534061, 4311167).

[3] https://www.arb.ca.gov/toxics/healthval/contable.pdf, Table 1- "Consolidated table of OEHHA/ARB approved risk assessment health values."
https://www.arb.ca.gov/toxics/healthval/totables.pdf, Table 4- "OEHHA/ARB approved Acute reference exposure levels and target organs."

Attachment 3

Carbon Monoxide Analysis

3A. AERMOD Dispersion Input / Output

```
**
**************************************
**
** AERMOD Input Produced by:
** AERMOD View Ver. 9.7.0
** Lakes Environmental Software Inc.
** Date: 12/5/2019
** File: C:\Users\4756dlw\Documents\Projects\Eastlake LF Expansion
\AERMOD\Eastlake_CO\Eastlake_CO.ADI
**
**************************************
**
**
**************************************
** AERMOD Control Pathway
**************************************
**
**
CO STARTING
   TITLEONE C:\Users\4756dlw\Documents\Projects\Eastlake LF Expansion
\AERMOD\Eas
   MODELOPT DFAULT CONC
   AVERTIME 1 8
   POLLUTID CO
   RUNORNOT RUN
   ERRORFIL "EASTLAKE SANITARY LANDFILL.ERR"
CO FINISHED
**
**************************************
** AERMOD Source Pathway
**************************************
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
   LOCATION FLARE        POINT      534852.000  4311828.000
524.760
** DESCRSRC PEI Enclosed Flare
** Source Parameters **
   SRCPARAM FLARE        0.7370876012    10.668  1020.928   0.53325
1.829
   SRCGROUP ALL
SO FINISHED
**
**************************************
** AERMOD Receptor Pathway
**************************************
**
```

```
**
RE STARTING
   INCLUDED Eastlake_CO.rou
RE FINISHED
**
****************************************
** AERMOD Meteorology Pathway
****************************************
**
**
ME STARTING
   SURFFILE "Met Data\725905.SFC"
   PROFFILE "MET DATA\725905.PFL"
   SURFDATA 23275 2009
   UAIRDATA 23230 2009 OAKLAND/WSO_AP
   PROFBASE 610.0 FEET
ME FINISHED
**
****************************************
** AERMOD Output Pathway
****************************************
**
**
OU STARTING
   RECTABLE ALLAVE 1ST
   RECTABLE 1 1ST
   RECTABLE 8 1ST
** Auto-Generated Plotfiles
   PLOTFILE 1 ALL 1ST Eastlake_CO.AD\01H1GALL.PLT 31
   PLOTFILE 8 ALL 1ST Eastlake_CO.AD\08H1GALL.PLT 32
   SUMMFILE "EASTLAKE SANITARY LANDFILL.SUM"
OU FINISHED

 *********************************
 *** SETUP Finishes Successfully ***
 *********************************
```

```
 *** AERMOD - VERSION  18081 ***   *** C:\Users\4756dlw\Documents
\Projects\Eastlake LF Expansion\AERMOD\Eas ***        12/05/19
 *** AERMET - VERSION  14134 ***   ***
***        12:12:29

PAGE   1
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL

                                                     ***     MODEL SETUP
OPTIONS SUMMARY       ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

 **Model Is Setup For Calculation of Average CONCentration Values.

   --  DEPOSITION LOGIC  --
 **NO GAS DEPOSITION Data Provided.
 **NO PARTICLE DEPOSITION Data Provided.
 **Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
 **Model Uses NO WET DEPLETION.  WETDPLT  =  F

 **Model Uses RURAL Dispersion Only.

 **Model Uses Regulatory DEFAULT Options:
         1. Stack-tip Downwash.
         2. Model Accounts for ELEVated Terrain Effects.
         3. Use Calms Processing Routine.
         4. Use Missing Data Processing Routine.
         5. No Exponential Decay.

 **Other Options Specified:
         CCVR_Sub - Meteorological data includes CCVR substitutions
         TEMP_Sub - Meteorological data includes TEMP substitutions

 **Model Assumes No FLAGPOLE Receptor Heights.

 **The User Specified a Pollutant Type of:  CO

 **Model Calculates  2 Short Term Average(s) of:   1-HR   8-HR

 **This Run Includes:      1 Source(s);       1 Source Group(s); and
489 Receptor(s)

                with:      1 POINT(s), including
                           0 POINTCAP(s) and      0 POINTHOR(s)
                 and:      0 VOLUME source(s)
                 and:      0 AREA type source(s)
                 and:      0 LINE source(s)
                 and:      0 OPENPIT source(s)
```

```
                and:      0 BUOYANT LINE source(s) with      0
line(s)


 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date:  14134

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

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

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

 **Approximate Storage Requirements of Model =      3.6 MB of RAM.

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

 **Detailed Error/Message File:   EASTLAKE SANITARY LANDFILL.ERR
 **File for Summary of Results:   EASTLAKE SANITARY LANDFILL.SUM
```

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** POINT SOURCE DATA ***

SOURCE ID	NUMBER EMISSION RATE PART. CATS.	(GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	STACK HEIGHT (METERS)	STACK TEMP. (DEG.K)	STACK EXIT VEL. (M/SEC)	STACK DIAMETER (METERS)	BLDG EXISTS	URBAN SOURCE	CAP/ HOR VARY BY	EMIS RATE SCALAR
FLARE	0	0.73709E+00	534852.0	4311828.0	524.8	10.67	1020.93	0.53	1.83	NO	NO	NO	

 *** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** SOURCE IDs DEFINING
SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs
ALL	FLARE ,

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** GRIDDED RECEPTOR NETWORK SUMMARY ***

*** NETWORK ID: UCART1 ; NETWORK TYPE: GRIDCART ***

*** X-COORDINATES OF GRID ***

(METERS)

533182.9, 533282.9, 533382.9, 533482.9, 533582.9, 533682.9, 533782.9, 533882.9, 533982.9, 534082.9,
534182.9, 534282.9, 534382.9, 534482.9, 534582.9, 534682.9, 534782.9, 534882.9, 534982.9, 535082.9,
535182.9,

*** Y-COORDINATES OF GRID ***

(METERS)

4310557.2, 4310657.2, 4310757.2, 4310857.2, 4310957.2, 4311057.2, 4311157.2, 4311257.2, 4311357.2, 4311457.2,
4311557.2, 4311657.2, 4311757.2, 4311857.2, 4311957.2, 4312057.2, 4312157.2, 4312257.2, 4312357.2, 4312457.2,
4312557.2,

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** NETWORK ID: UCART1 ; NETWORK TYPE: GRIDCART ***

* ELEVATION HEIGHTS IN METERS *

Y-COORD (METERS)	X-COORD (METERS)				
	533182.89	533282.89	533382.89	533482.89	533582.89
4312557.16	489.70	502.70	517.60	536.80	561.60
4312457.16	491.80	504.00	517.80	531.70	547.50
4312357.16	492.50	501.90	510.40	524.90	534.60
4312257.16	489.50	492.50	501.90	513.30	521.70
4312157.16	498.40	485.30	488.30	501.90	509.90
4312057.16	499.90	482.40	481.90	488.70	492.20
4311957.16	488.20	486.80	475.20	480.00	484.80
4311857.16	487.80	485.50	475.00	474.00	475.10
4311757.16	486.80	483.20	478.00	474.40	473.80
4311657.16	476.20	478.90	478.40	475.50	473.80
4311557.16	465.10	474.60	477.00	476.10	473.50
4311457.16	463.80	469.10	473.90	476.00	472.80
4311357.16	461.50	462.40	464.80	470.70	475.90
4311257.16	452.00	458.30	461.00	463.90	470.90

533682.89	533782.89	533882.89	533982.89
587.30	602.60	608.20	612.50
565.90	582.00	593.50	606.50
546.50	562.10	582.50	598.20
528.70	545.70	564.20	588.30
512.20	523.00	545.10	577.70
501.20	511.10	531.40	564.70
489.70	498.90	516.90	541.00
477.90	487.00	499.50	516.30
473.90	478.90	486.90	496.90
472.20	474.00	480.20	487.50
470.00	472.00	477.30	483.50
465.30	469.60	473.00	474.90
463.20	465.70	471.50	477.10
476.60	463.00	470.80	476.60

4311157.16	462.90	457.80	459.90	461.70	462.80
466.10	463.90	468.50	474.70		
4311057.16	452.80	456.30	458.60	460.30	462.30
463.00	463.00	464.50	470.60		
4310957.16	458.80	459.90	461.00	461.90	462.30
464.60	465.00	465.90	471.80		
4310857.16	464.00	464.00	464.00	464.00	464.10
464.90	467.30	469.60	473.30		
4310757.16	462.20	464.50	463.60	463.40	465.00
466.60	467.90	470.30	474.70		
4310657.16	455.00	462.60	463.40	460.00	464.00
465.60	466.90	468.00	467.50		
4310557.16	450.40	451.40	451.20	457.00	463.20
463.70	466.90	465.40	462.80		

*** NETWORK ID: UCART1 ; NETWORK TYPE: GRIDCART ***

* ELEVATION HEIGHTS IN METERS *

Y-COORD (METERS)	X-COORD (METERS)				
	534082.89	534182.89	534282.89	534382.89	534482.89
534582.89	534682.89	534782.89	534882.89		
4312557.16	621.90	611.30	603.80	597.70	595.80
607.20	621.60	620.50	632.70		
4312457.16	617.80	619.50	612.30	609.00	597.70
603.20	621.40	621.00	630.50		
4312357.16	611.30	618.90	623.50	617.50	604.80
601.00	608.40	624.10	629.20		
4312257.16	603.80	618.40	626.00	620.30	605.20
599.40	606.20	622.80	631.20		
4312157.16	593.80	611.20	623.60	624.90	609.50
588.60	595.90	618.70	627.10		
4312057.16	584.20	598.50	610.10	611.60	598.40
570.00	572.50	575.50	592.70		
4311957.16	563.90	578.90	584.70	576.90	564.30
545.40	539.20	537.50	558.40		
4311857.16	533.90	548.10	552.30	541.70	529.10
517.50	508.40	517.20	530.80		
4311757.16	512.40	520.70	526.30	516.90	501.30
498.30	521.30	525.20	512.20		
4311657.16	503.40	501.10	513.30	500.40	491.70
522.30	527.10	511.40	535.40		
4311557.16	487.20	486.40	507.40	491.60	502.20
523.40	517.80	501.20	514.90		
4311457.16	482.20	491.10	502.10	484.70	506.40
525.10	499.50	508.30	525.60		
4311357.16	483.50	497.80	495.30	478.90	506.80
508.50	494.60	516.70	532.10		
4311257.16	481.90	488.00	485.00	476.00	500.40
489.20	507.90	527.90	523.20		

```
  4311157.16 |       475.80       475.10       476.00       480.10
487.30       481.50       495.20       495.70       503.70
  4311057.16 |       473.90       477.20       486.80       485.20
487.80       475.40       495.90       512.70       523.90
  4310957.16 |       476.00       479.30       480.10       484.70
487.00       473.80       483.80       501.10       516.80
  4310857.16 |       476.60       477.40       474.90       480.20
476.50       474.90       484.80       497.80       506.10
  4310757.16 |       476.00       475.10       473.90       473.80
463.10       483.80       489.60       493.40       485.80
  4310657.16 |       467.00       463.60       465.70       464.30
472.50       484.00       486.00       488.80       469.10
  4310557.16 |       461.00       455.80       459.70       452.10
467.90       482.50       480.20       485.90       466.70
```

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** NETWORK ID: UCART1 ; NETWORK TYPE: GRIDCART ***

* ELEVATION HEIGHTS IN METERS *

Y-COORD (METERS)	X-COORD (METERS)	534982.89	535082.89	535182.89
4312557.16		639.20	645.90	648.90
4312457.16		633.80	636.50	628.70
4312357.16		634.90	625.00	604.50
4312257.16		635.60	617.20	591.40
4312157.16		635.10	608.90	585.50
4312057.16		595.90	585.20	583.50
4311957.16		560.20	555.50	587.90
4311857.16		528.00	557.40	561.60
4311757.16		520.10	533.60	533.80
4311657.16		552.30	555.00	565.30
4311557.16		531.60	544.90	536.00
4311457.16		539.40	551.50	520.00
4311357.16		540.20	538.40	521.90
4311257.16		518.40	536.40	510.80
4311157.16		526.40	518.60	497.40
4311057.16		520.00	495.80	502.60
4310957.16		500.40	489.90	492.00
4310857.16		487.40	472.70	499.10
4310757.16		475.90	477.20	499.20
4310657.16		461.20	488.00	483.60
4310557.16		479.10	468.80	470.60

*** NETWORK ID: UCART1 ; NETWORK TYPE: GRIDCART ***

* HILL HEIGHT SCALES IN METERS *

Y-COORD (METERS)	X-COORD (METERS)				
	533182.89	533282.89	533382.89	533482.89	533582.89
533682.89	533782.89	533882.89	533982.89		
4312557.16	626.00	626.00	626.00	626.00	624.00
624.00	624.00	624.00	624.00	621.00	
4312457.16	626.00	626.00	626.00	626.00	626.00
624.00	624.00	624.00	624.00	623.00	
4312357.16	626.00	626.00	626.00	626.00	626.00
626.00	626.00	626.00	626.00	624.00	
4312257.16	626.00	626.00	626.00	626.00	626.00
626.00	626.00	626.00	626.00	626.00	
4312157.16	626.00	626.00	626.00	626.00	626.00
626.00	626.00	626.00	626.00	626.00	
4312057.16	626.00	626.00	626.00	637.00	637.00
637.00	637.00	637.00	626.00	626.00	
4311957.16	626.00	626.00	637.00	637.00	644.00
650.00	650.00	650.00	637.00	626.00	
4311857.16	626.00	626.00	637.00	638.00	650.00
651.00	651.00	651.00	650.00	644.00	
4311757.16	626.00	626.00	626.00	637.00	649.00
651.00	651.00	651.00	651.00	651.00	
4311657.16	626.00	626.00	626.00	637.00	637.00
650.00	651.00	651.00	651.00	651.00	
4311557.16	626.00	626.00	626.00	637.00	637.00
650.00	651.00	651.00	651.00	651.00	
4311457.16	626.00	626.00	626.00	626.00	637.00
650.00	650.00	651.00	651.00	651.00	
4311357.16	626.00	626.00	626.00	626.00	637.00
637.00	650.00	650.00	650.00	650.00	
4311257.16	626.00	626.00	626.00	637.00	637.00
637.00	648.00	638.00	648.00		

4311157.16	626.00	626.00	626.00	626.00	637.00
637.00	637.00	637.00	637.00	637.00	
4311057.16	626.00	626.00	626.00	626.00	626.00
626.00	637.00	637.00	637.00	637.00	
4310957.16	625.00	626.00	626.00	626.00	626.00
626.00	626.00	637.00	637.00	637.00	
4310857.16	464.00	464.00	624.00	626.00	626.00
626.00	626.00	626.00	626.00	637.00	
4310757.16	462.20	464.50	463.60	463.40	625.00
626.00	626.00	626.00	626.00		
4310657.16	462.00	462.60	463.40	460.00	464.00
465.60	466.90	624.00	625.00		
4310557.16	450.40	464.00	464.00	464.00	463.20
463.70	466.90	465.40	462.80		

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** NETWORK ID: UCART1 ; NETWORK
TYPE: GRIDCART ***

* HILL HEIGHT SCALES
IN METERS *

Y-COORD (METERS)	X-COORD (METERS)				
	534082.89	534182.89	534282.89	534382.89	534482.89	534582.89	534682.89	534782.89	534882.89
4312557.16	621.90	623.00	623.00	626.00	625.00	623.00	621.60	638.00	632.70
4312457.16	622.00	621.00	625.00	625.00	626.00	624.00	622.00	634.00	634.00
4312357.16	622.00	622.00	623.50	625.00	626.00	627.00	634.00	624.10	629.20
4312257.16	626.00	624.00	626.00	624.00	626.00	635.00	637.00	622.80	631.20
4312157.16	626.00	626.00	623.60	624.90	625.00	637.00	637.00	637.00	637.00
4312057.16	626.00	626.00	626.00	625.00	626.00	650.00	651.00	651.00	650.00
4311957.16	626.00	626.00	626.00	635.00	637.00	655.00	655.00	655.00	655.00
4311857.16	637.00	637.00	637.00	650.00	655.00	655.00	655.00	655.00	655.00
4311757.16	650.00	650.00	650.00	655.00	655.00	655.00	655.00	655.00	655.00
4311657.16	650.00	651.00	651.00	655.00	655.00	655.00	655.00	655.00	655.00
4311557.16	651.00	655.00	651.00	655.00	655.00	655.00	655.00	655.00	655.00
4311457.16	651.00	651.00	651.00	655.00	655.00	650.00	655.00	655.00	655.00
4311357.16	650.00	648.00	650.00	655.00	650.00	655.00	655.00	655.00	637.00
4311257.16	649.00	649.00	651.00	655.00	650.00	655.00	654.00	637.00	637.00

4311157.16	648.00	650.00	654.00	655.00	655.00
655.00	655.00	655.00	655.00	655.00	
4311057.16	637.00	637.00	637.00	637.00	637.00
648.00	655.00	637.00	637.00	637.00	
4310957.16	637.00	637.00	637.00	637.00	637.00
637.00	655.00	650.00	637.00	637.00	
4310857.16	637.00	637.00	637.00	637.00	637.00
637.00	637.00	637.00	637.00	637.00	
4310757.16	626.00	637.00	637.00	637.00	637.00
637.00	637.00	637.00	637.00	637.00	
4310657.16	626.00	637.00	637.00	637.00	637.00
637.00	490.00	486.00	488.80	637.00	
4310557.16	625.00	637.00	637.00	637.00	637.00
637.00	490.00	490.00	489.00	637.00	

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** NETWORK ID: UCART1 ; NETWORK TYPE: GRIDCART ***

* HILL HEIGHT SCALES IN METERS *

Y-COORD (METERS)	X-COORD (METERS)	534982.89	535082.89	535182.89
4312557.16	639.20	645.90	648.90
4312457.16	633.80	650.00	651.00
4312357.16	634.90	650.00	655.00
4312257.16	635.60	650.00	655.00
4312157.16	635.10	650.00	655.00
4312057.16	650.00	655.00	655.00
4311957.16	655.00	655.00	655.00
4311857.16	655.00	655.00	655.00
4311757.16	655.00	655.00	655.00
4311657.16	655.00	655.00	655.00
4311557.16	655.00	655.00	655.00
4311457.16	655.00	637.00	655.00
4311357.16	637.00	637.00	655.00
4311257.16	655.00	637.00	655.00
4311157.16	637.00	637.00	655.00
4311057.16	637.00	655.00	655.00
4310957.16	637.00	655.00	655.00
4310857.16	637.00	655.00	637.00
4310757.16	654.00	655.00	635.00
4310657.16	655.00	635.00	637.00
4310557.16	635.00	637.00	637.00

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** DISCRETE CARTESIAN
RECEPTORS ***
(X-COORD, Y-COORD, ZELEV,
ZHILL, ZFLAG)
(METERS)

(533957.0, 4311882.0, 516.9, 637.0, 0.0);
(533711.0, 4311848.0, 479.8, 651.0, 0.0);
(534870.0, 4311815.0, 521.3, 655.0, 0.0);
(534770.0, 4311705.0, 519.0, 655.0, 0.0);
(534670.0, 4311412.0, 499.6, 655.0, 0.0);
(534508.0, 4311155.0, 487.8, 655.0, 0.0);
(534370.0, 4311299.0, 476.2, 655.0, 0.0);
(534330.0, 4311410.0, 487.6, 655.0, 0.0);
(534280.0, 4311755.0, 525.7, 650.0, 0.0);
(534761.0, 4311925.0, 525.5, 655.0, 0.0);
(534836.7, 4311778.3, 517.3, 655.0, 0.0);
(534803.3, 4311741.7, 517.7, 655.0, 0.0);
(534755.7, 4311663.1, 516.9, 655.0, 0.0);
(534741.4, 4311621.3, 514.1, 655.0, 0.0);
(534727.1, 4311579.4, 507.9, 655.0, 0.0);
(534712.9, 4311537.6, 507.1, 655.0, 0.0);
(534698.6, 4311495.7, 504.3, 655.0, 0.0);
(534684.3, 4311453.9, 498.6, 655.0, 0.0);
(534646.9, 4311375.3, 496.4, 655.0, 0.0);
(534623.7, 4311338.6, 492.8, 655.0, 0.0);
(534600.6, 4311301.9, 489.7, 655.0, 0.0);
(534577.4, 4311265.1, 490.3, 655.0, 0.0);
(534554.3, 4311228.4, 490.9, 655.0, 0.0);
(534531.1, 4311191.7, 490.9, 655.0, 0.0);
(534473.5, 4311191.0, 489.5, 655.0, 0.0);
(534439.0, 4311227.0, 491.8, 654.0, 0.0);
(534404.5, 4311263.0, 481.7, 655.0, 0.0);
(534356.7, 4311336.0, 477.3, 655.0, 0.0);
(534343.3, 4311373.0, 484.6, 655.0, 0.0);
(534322.9, 4311459.3, 494.3, 655.0, 0.0);
(534315.7, 4311508.6, 502.2, 654.0, 0.0);
(534308.6, 4311557.9, 509.4, 651.0, 0.0);
(534301.4, 4311607.1, 513.7, 651.0, 0.0);
(534294.3, 4311656.4, 516.9, 651.0, 0.0);
(534287.1, 4311705.7, 519.4, 651.0, 0.0);

```
( 534323.7, 4311770.5,     527.1,     651.0,       0.0);
     ( 534367.5, 4311785.9,     525.7,     651.0,       0.0);
( 534411.2, 4311801.4,     522.7,     655.0,       0.0);
     ( 534454.9, 4311816.8,     521.1,     655.0,       0.0);
( 534498.6, 4311832.3,     519.7,     655.0,       0.0);
     ( 534542.4, 4311847.7,     517.9,     655.0,       0.0);
( 534586.1, 4311863.2,     518.9,     655.0,       0.0);
     ( 534629.8, 4311878.6,     517.5,     655.0,       0.0);
( 534673.6, 4311894.1,     520.7,     655.0,       0.0);
     ( 534717.3, 4311909.5,     523.4,     655.0,       0.0);
( 534788.2, 4311897.5,     522.8,     655.0,       0.0);
     ( 534815.5, 4311870.0,     522.5,     655.0,       0.0);
( 534842.8, 4311842.5,     525.0,     655.0,       0.0);
```

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

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

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

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

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***

(METERS/SEC)

1.54,   3.09,   5.14,   8.23, 10.80,

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

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

Surface file: Met Data\725905.SFC
Met Version: 14134
Profile file: MET DATA\725905.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 23275 Upper air station no.: 23230
Name: UNKNOWN Name: OAKLAND/WSO_AP
Year: 2009 Year: 2009

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
09	01	01	1	01	-3.7	0.073	-9.000	-9.000	-999.	47.	9.4	0.08	0.90	1.00	1.76	271.	10.0	282.0	2.0
09	01	01	1	02	-8.6	0.154	-9.000	-9.000	-999.	146.	38.1	0.08	0.90	1.00	2.36	318.	10.0	282.0	2.0
09	01	01	1	03	-3.7	0.073	-9.000	-9.000	-999.	50.	9.5	0.08	0.90	1.00	1.76	314.	10.0	281.4	2.0
09	01	01	1	04	-3.7	0.073	-9.000	-9.000	-999.	48.	9.5	0.08	0.90	1.00	1.76	333.	10.0	281.4	2.0
09	01	01	1	05	-3.7	0.073	-9.000	-9.000	-999.	47.	9.4	0.08	0.90	1.00	1.76	293.	10.0	280.9	2.0
09	01	01	1	06	-8.6	0.154	-9.000	-9.000	-999.	145.	37.9	0.08	0.90	1.00	2.36	332.	10.0	280.9	2.0
09	01	01	1	07	-3.7	0.073	-9.000	-9.000	-999.	50.	9.4	0.08	0.90	1.00	1.76	305.	10.0	280.4	2.0
09	01	01	1	08	-3.7	0.073	-9.000	-9.000	-999.	48.	9.5	0.08	0.90	1.00	1.76	303.	10.0	280.9	2.0
09	01	01	1	09	-0.9	0.142	-9.000	-9.000	-999.	128.	297.2	0.08	0.90	0.43	1.76	327.	10.0	280.4	2.0
09	01	01	1	10	33.4	-9.000	-9.000	-9.000	217.	-999.	-99999.0	0.07	0.90	0.28	0.00	0.	10.0	282.0	2.0
09	01	01	1	11	74.2	0.192	0.930	0.016	387.	203.	-8.6								

```
0.08   0.90   0.23    1.76  294.   10.0  283.1    2.0
 09 01 01   1 12   45.1 -9.000 -9.000 -9.000  441. -999. -99999.0
0.07   0.90   0.21    0.00    0.   10.0  284.2    2.0
 09 01 01   1 13   99.5  0.246  1.098  0.016  474.  292.    -13.2
0.08   0.90   0.21    2.36  343.   10.0  286.4    2.0
 09 01 01   1 14   18.6  0.218  0.631  0.016  480.  244.    -49.3
0.08   0.90   0.22    2.36  309.   10.0  287.5    2.0
 09 01 01   1 15   11.9  0.220  0.546  0.015  484.  248.    -79.7
0.04   0.90   0.25    2.86    2.   10.0  288.1    2.0
 09 01 01   1 16   10.5  0.290  0.524  0.015  487.  374.   -206.2
0.08   0.90   0.33    3.36  354.   10.0  288.1    2.0
 09 01 01   1 17  -10.7  0.221 -9.000 -9.000 -999.  251.     89.5
0.04   0.90   0.57    3.36   41.   10.0  287.1    2.0
 09 01 01   1 18   -3.7  0.073 -9.000 -9.000 -999.   72.      9.5
0.08   0.90   1.00    1.76  357.   10.0  286.1    2.0
 09 01 01   1 19 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0
0.07   0.90   1.00    0.00    0.   10.0  285.1    2.0
 09 01 01   1 20 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0
0.07   0.90   1.00    0.00    0.   10.0  285.1    2.0
 09 01 01   1 21 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0
0.07   0.90   1.00    0.00    0.   10.0  285.1    2.0
 09 01 01   1 22 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0
0.07   0.90   1.00    0.00    0.   10.0  284.1    2.0
 09 01 01   1 23   -5.6  0.077 -9.000 -9.000 -999.   51.      7.2
0.10   0.90   1.00    1.76  180.   10.0  282.1    2.0
 09 01 01   1 24 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0
0.07   0.90   1.00    0.00    0.   10.0  283.1    2.0


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 09 01 01 01   10.0 1  271.    1.76   282.1   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
```

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE 1ST HIGHEST 1-HR AVERAGE
CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S):
FLARE ,

*** NETWORK ID: UCART1 ; NETWORK
TYPE: GRIDCART ***

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

Y-COORD (METERS)	X-COORD (METERS)				
	533182.89	533282.89	533382.89	533482.89	533582.89
4312557.2	11.09572 (12090520)	11.13017 (09070120)	13.37648 (10120818)	15.10458 (10011623)	23.84958 (12020104)
4312457.2	10.86747 (10012505)	11.33450 (10012505)	13.43790 (12122006)	15.66833 (12122006)	35.11016 (12120723)
4312357.2	11.96797 (11120501)	11.99765 (11120501)	12.53486 (12012221)	16.73364 (10012505)	15.81205 (12122006)
4312257.2	11.16984 (10022523)	11.32036 (10022523)	12.15187 (12012220)	13.47165 (12012220)	16.19891 (10012424)
4312157.2	10.28033 (10120218)	10.75248 (10022523)	11.92896 (10022523)	12.94262 (10022523)	13.75117 (10022523)
4312057.2	11.34303 (10122308)	11.81116 (10120218)	12.47235 (10120218)	12.97128 (10120218)	13.19987 (10120218)
4311957.2	11.38145 (09022824)	11.97836 (09022824)	12.55906 (09022824)	13.09333 (09022824)	13.53466 (09022824)
4311857.2	10.24304 (12110818)	10.24855 (12103106)	10.27448 (12103106)	10.23223 (12103106)	10.90720 (12122008)
4311757.2	11.02286 (11022018)	11.62932 (11022018)	12.26404 (11022018)	12.91518 (11022018)	13.56448 (11022018)
4311657.2	11.08801 (11070221)	11.47986 (11070221)	11.75747 (11070221)	11.86570 (11070221)	11.65697 (11070221)
4311557.2	10.07714 (11071703)	10.33030 (11071703)	11.07184 (12021023)	12.43315 (12021023)	13.63138 (12021023)
4311457.2	11.54326 (12021023)	12.10015 (12021023)			

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12.61853 (10121919)     12.79850 (10121919)     12.28717 (10121919)
 4311357.2 |     10.74866 (10100219)     10.73122 (09012618)
12.25464 (09012618)     12.99443 (09012618)     12.45176 (09012618)
 4311257.2 |     12.23555 (09012618)     12.13614 (09012618)
11.21775 (12012207)     12.44325 (12012207)     12.58257 (12012207)
 4311157.2 |     10.57869 (12012207)     11.31761 (12012207)
11.19834 (12012207)     11.60159 (09022418)     11.48036 (09022418)
 4311057.2 |      9.93751 (12012207)     10.24356 (09022418)
10.20368 (09022418)     11.04372 (10020109)     11.35100 (10020109)
 4310957.2 |      9.36409 (09110919)     10.00410 (09110919)
10.23212 (10020109)      9.95423 (12050102)     11.71880 (12050102)
 4310857.2 |     10.06479 (11033003)      9.05368 (10020109)
10.03132 (12050102)     10.94723 (12050102)     11.01323 (09031920)
 4310757.2 |      8.41823 (12050102)      9.72332 (12050102)
9.98177 (12050102)     10.04827 (09031920)     11.37799 (11052306)
 4310657.2 |      9.17752 (12050102)      9.97892 (09070802)
10.37716 (09070802)     11.01478 (11052306)     12.07053 (12021918)
 4310557.2 |     10.42395 (09070802)     10.26243 (10061824)
10.56661 (11052306)     12.03060 (12021918)     11.22994 (13012908)
```

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE 1ST HIGHEST 1-HR AVERAGE
CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S):
FLARE ,

*** NETWORK ID: UCART1 ; NETWORK
TYPE: GRIDCART ***

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

Y-COORD (METERS)	X-COORD (METERS)				
	533682.89	533782.89	533882.89	533982.89	534082.89
4312557.2	7.44026 (11031918)	6.67289 (13030608)	6.75630 (10011622)	7.34931 (10022521)	7.65977 (10012503)
4312457.2	16.19349 (10103005)	8.81898 (11031918)	7.49270 (11031918)	7.69186 (10011622)	8.05777 (10022521)
4312357.2	42.54546 (13122519)	27.52276 (11022406)	8.94781 (10121716)	8.21990 (11031918)	8.49752 (10122422)
4312257.2	17.73218 (12012221)	34.08766 (13122519)	22.20124 (11011223)	8.75630 (10011118)	9.37729 (10121716)
4312157.2	13.96878 (12012220)	18.18236 (12012220)	37.23715 (12021118)	13.74833 (09121016)	11.38551 (09121016)
4312057.2	13.02724 (10120218)	14.00635 (10022523)	18.75130 (10022523)	24.84145 (10121702)	14.19846 (10120516)
4311957.2	13.88293 (10122308)	14.41254 (10122308)	16.60156 (12122205)	35.73860 (12121320)	31.01820 (12031103)
4311857.2	11.86711 (12122008)	12.95209 (12122008)	14.23164 (12122008)	17.29157 (12122008)	21.66472 (12122008)
4311757.2	14.18237 (11022018)	14.72088 (11022018)	15.10391 (11022018)	15.21379 (11022018)	17.06556 (12041607)
4311657.2	10.62801 (11070221)	11.06822 (12021023)	12.92318 (12021023)	14.55628 (12021023)	15.37653 (12021023)
4311557.2	14.42360 (12021023)	14.84171 (10121919)	14.49321 (10121919)	15.25331 (12122218)	15.44849 (11030303)
4311457.2	12.45051 (09012618)	12.98463 (09012618)			

13.79129 (11030303) 14.89372 (12012207) 16.54363 (09022418)
 4311357.2 | 13.35750 (12012207) 13.95193 (12012207)
14.93564 (09022418) 14.79950 (10020109) 16.80528 (12122207)
 4311257.2 | 13.18578 (09022418) 12.88611 (09022418)
14.23887 (10020109) 14.30918 (12050102) 15.32033 (09031920)
 4311157.2 | 12.60831 (10020109) 12.33100 (10020109)
14.10692 (12050102) 14.32782 (09031920) 16.14638 (12021920)
 4311057.2 | 12.07174 (12050102) 13.04945 (12050102)
13.71864 (12021920) 15.43587 (12022719) 15.66645 (13012908)
 4310957.2 | 11.90120 (09031920) 12.87753 (12021920)
14.54658 (12022719) 14.77049 (13012908) 14.13471 (10050102)
 4310857.2 | 11.91198 (12021920) 13.57478 (12022719)
13.82936 (13012908) 13.26917 (10050102) 14.98401 (13121822)
 4310757.2 | 12.60702 (12022719) 12.90808 (13012908)
12.56199 (13012908) 13.69297 (13121822) 13.67851 (09122207)
 4310657.2 | 12.03742 (13012908) 12.10798 (13120623)
12.31221 (13121822) 12.89373 (13121822) 13.54831 (13010717)
 4310557.2 | 11.85679 (13120623) 10.97997 (13121822)
12.47095 (13121822) 13.11940 (13010717) 13.25748 (13010719)

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE 1ST HIGHEST 1-HR AVERAGE
CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S):
FLARE ,

*** NETWORK ID: UCART1 ; NETWORK
TYPE: GRIDCART ***

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

Y-COORD (METERS)	X-COORD (METERS)				
	534182.89	534282.89	534382.89	534482.89	534582.89
4312557.2	8.23718 (12122516)	8.67658 (09020509)	12.00876 (12031608)	11.90022 (10080619)	11.35143 (09122616)
4312457.2	8.48088 (10012503)	9.62777 (12122516)	9.58018 (11021501)	14.09327 (12031608)	13.51950 (10120816)
4312357.2	8.91256 (10121822)	9.48380 (10020520)	11.27656 (12122516)	12.62925 (12120416)	13.83645 (10080619)
4312257.2	9.39098 (10022704)	10.19688 (11010205)	11.51744 (10122105)	13.83874 (09020509)	14.90724 (12031608)
4312157.2	9.66329 (10011118)	11.54876 (10122109)	12.63333 (10121821)	14.57741 (10122105)	17.92527 (10011708)
4312057.2	11.94242 (09121016)	12.44017 (09121016)	12.61414 (11010206)	15.41521 (10121802)	28.12742 (09083107)
4311957.2	12.72224 (10112709)	15.86693 (10120516)	23.21426 (10120516)	57.14705 (12012217)	124.09989 (13122519)
4311857.2	86.07540 (12010722)	105.05979 (09120302)	65.74553 (11021319)	35.13350 (10022703)	40.42304 (10012517)
4311757.2	20.94327 (11010203)	27.31697 (11010203)	26.19185 (11010203)	25.90233 (11010203)	32.85798 (11010124)
4311657.2	18.70186 (12122218)	21.36781 (12122218)	23.29135 (11010204)	21.99660 (11010204)	38.57269 (10100718)
4311557.2	16.47503 (11030303)	16.92893 (09022418)	22.89290 (12122207)	23.68799 (13041507)	37.03062 (12022219)
4311457.2	18.22120 (12122207)	19.68377 (12122207)			

19.16777 (13041507) 21.72072 (10051922) 36.26034 (12012617)
 4311357.2 | 15.99883 (12050102) 19.13311 (12021920)
18.55942 (10051922) 20.68666 (09010117) 22.66976 (09122203)
 4311257.2 | 17.88270 (12021920) 16.69475 (13012908)
18.44829 (09010117) 19.16160 (09122204) 21.24458 (12021719)
 4311157.2 | 16.38885 (13012908) 15.89916 (09010117)
16.42476 (11012609) 19.35533 (12010517) 19.32272 (12022218)
 4311057.2 | 14.83972 (13041103) 15.94629 (13121822)
17.20061 (10012524) 17.46822 (12022618) 18.32123 (13121819)
 4310957.2 | 15.90540 (13121822) 16.15789 (11012609)
16.56313 (12010517) 16.96204 (12021919) 17.08953 (13012621)
 4310857.2 | 14.65022 (09122207) 15.70296 (13010719)
15.92901 (12121819) 16.25586 (09012508) 16.55121 (13012621)
 4310757.2 | 14.52109 (13010719) 13.93431 (12010517)
15.41495 (10011318) 14.36816 (09042601) 15.47060 (09122218)
 4310657.2 | 13.72811 (13010719) 14.54351 (12121819)
14.18289 (09122202) 13.93483 (13012621) 14.46030 (13022618)
 4310557.2 | 12.67757 (12121819) 13.70797 (10020702)
13.11901 (09012508) 13.80059 (09122218) 13.32000 (12010617)

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE 1ST HIGHEST 1-HR AVERAGE
CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S):
FLARE ,

*** NETWORK ID: UCART1 ; NETWORK
TYPE: GRIDCART ***

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

Y-COORD (METERS)	X-COORD (METERS)				
	534682.89	534782.89	534882.89	534982.89	535082.89
4312557.2	11.31952 (09021217)	10.10455 (12120107)	9.25222 (10120502)	8.98852 (12120322)	9.88431 (10013117)
4312457.2	12.70837 (12122116)	11.77424 (10120216)	10.72599 (10120502)	10.51362 (12122104)	9.92022 (10013117)
4312357.2	14.83065 (09021109)	14.34503 (10120216)	12.47691 (10120502)	12.58641 (09121521)	10.80123 (10121917)
4312257.2	16.41208 (09022302)	17.53065 (10120808)	14.92486 (10020409)	15.06790 (09121521)	12.21485 (12032119)
4312157.2	20.68486 (10012002)	22.98253 (12120120)	20.59431 (10020409)	19.79913 (10121917)	13.96087 (11051420)
4312057.2	28.59792 (10021109)	33.72472 (09122710)	29.05698 (09022303)	24.67371 (11051419)	19.36743 (12102318)
4311957.2	67.61653 (10122609)	105.54574 (10011123)	226.19035 (09123107)	153.75934 (11011221)	152.03891 (09021608)
4311857.2	65.62488 (12020620)	116.91731 (11031924)	289.64442 (12122201)	96.66328 (13112206)	163.55024 (09021107)
4311757.2	64.08355 (11010124)	95.04160 (12061422)	121.41796 (09051119)	79.57039 (11022318)	61.38815 (10020624)
4311657.2	59.46812 (09032821)	58.56917 (13052102)	85.38880 (13022222)	243.39167 (13120902)	158.28367 (13022108)
4311557.2	36.77372 (13052422)	38.03687 (09031919)	42.21829 (11120120)	48.74447 (13022306)	117.04438 (12121722)
4311457.2	28.72805 (13012609)	28.68804 (13012917)			

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38.94446 (11011904)     45.33523 (09122818)    136.53153 (10011324)
 4311357.2 |     25.07083 (11011817)     27.92703 (13012917)
31.41563 (10021519)     47.18309 (12021704)     30.52627 (09021508)
 4311257.2 |     21.68304 (13020309)     30.20288 (09021209)
26.33663 (10021519)     23.87190 (09121709)     26.75906 (09122223)
 4311157.2 |     20.47970 (12021804)     22.02193 (09021209)
18.75038 (12121818)     25.16885 (09012818)     21.02307 (09021206)
 4311057.2 |     19.05498 (12010617)     22.03663 (09021209)
22.75331 (12121818)     21.00711 (13122109)     17.30859 (13010923)
 4310957.2 |     17.62709 (12010617)     18.31128 (09021209)
17.72068 (12121818)     16.37156 (12122619)     16.13689 (13120707)
 4310857.2 |     16.68099 (11011718)     16.89171 (12021808)
15.14864 (12121818)     15.02179 (09010702)     14.82858 (09122919)
 4310757.2 |     16.24345 (11011718)     15.90293 (11010819)
13.84379 (12121818)     14.68549 (09010702)     14.21165 (12012103)
 4310657.2 |     15.28870 (11011718)     15.38203 (11010819)
13.08527 (10123019)     14.04553 (09010702)     13.97009 (12012103)
 4310557.2 |     14.19742 (11011717)     14.75025 (11010819)
12.98918 (10123019)     13.66839 (11020420)     13.25289 (12012103)
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*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE 1ST HIGHEST 1-HR AVERAGE
CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S):
FLARE ,

*** NETWORK ID: UCART1 ; NETWORK
TYPE: GRIDCART ***

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

Y-COORD (METERS)	X-COORD (METERS) 535182.89
4312557.2	7.64463 (09021218)
4312457.2	8.50308 (12032119)
4312357.2	10.38033 (09052019)
4312257.2	12.87242 (11031418)
4312157.2	16.96895 (11060419)
4312057.2	12.83916 (10032819)
4311957.2	19.42933 (12022901)
4311857.2	82.90228 (10051721)
4311757.2	39.54986 (11031606)
4311657.2	46.87663 (09010609)
4311557.2	34.13163 (12012717)
4311457.2	26.39379 (12012303)
4311357.2	25.68764 (13120304)
4311257.2	20.83807 (12021217)
4311157.2	17.96467 (12121509)
4311057.2	17.01865 (13010609)
4310957.2	15.73910 (09010909)
4310857.2	14.96946 (10022020)
4310757.2	14.30261 (13020308)
4310657.2	13.91000 (13021820)
4310557.2	13.28422 (10122706)

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE 1ST HIGHEST 1-HR AVERAGE
CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S):
FLARE ,

*** DISCRETE CARTESIAN
RECEPTOR POINTS ***

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

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
533957.00	4311882.00	16.41590	(09021519)
533711.00	4311848.00	12.33963	(12122008)
534870.00	4311815.00	35.34547	(09100312)
534770.00	4311705.00	75.02931	(13030818)
534670.00	4311412.00	26.16861	(13012906)
534508.00	4311155.00	19.37480	(09012523)
534370.00	4311299.00	19.17022	(09010117)
534330.00	4311410.00	19.03411	(12021920)
534280.00	4311755.00	27.26400	(11010203)
534761.00	4311925.00	113.22334	(11021506)
534836.67	4311778.33	118.21297	(11071021)
534803.33	4311741.67	101.36492	(10082119)
534755.71	4311663.14	58.25532	(09050720)
534741.43	4311621.29	47.00026	(09050720)
534727.14	4311579.43	38.29271	(13052024)
534712.86	4311537.57	33.51770	(13012609)
534698.57	4311495.71	31.50565	(13012609)
534684.29	4311453.86	28.79969	(13012609)
534646.86	4311375.29	24.82955	(13012906)
534623.71	4311338.57	23.22687	(13012906)
534600.57	4311301.86	21.78283	(12021719)
534577.43	4311265.14	21.23121	(09012523)
534554.29	4311228.43	20.73386	(09012523)
534531.14	4311191.71	20.09614	(09012523)
534473.50	4311191.00	19.00733	(10012524)
534439.00	4311227.00	17.81849	(12012617)

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        534404.50   4311263.00       17.90576  (09010117)
534356.67   4311336.00       17.83686  (10051922)
        534343.33   4311373.00       18.51883  (12021920)
534322.86   4311459.29       18.35415  (11041020)
        534315.71   4311508.57       21.85739  (12122207)
534308.57   4311557.86       16.93527  (12122207)
        534301.43   4311607.14       20.77900  (11010204)
534294.29   4311656.43       22.22894  (12122218)
        534287.14   4311705.71       20.61969  (11010203)
534323.73   4311770.45       28.46610  (11010203)
        534367.45   4311785.91       29.14170  (11010203)
534411.18   4311801.36       30.32817  (12012023)
        534454.91   4311816.82       31.78370  (12012023)
534498.64   4311832.27       33.35964  (10012519)
        534542.36   4311847.73       34.12517  (12030918)
534586.09   4311863.18       41.58613  (10012517)
        534629.82   4311878.64       50.27919  (12020620)
534673.55   4311894.09       61.88890  (11010121)
        534717.27   4311909.55       84.79186  (12020619)
534788.25   4311897.50      125.32218  (12033022)
        534815.50   4311870.00      151.12847  (12112909)
534842.75   4311842.50        7.10291  (12073112)
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*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE 1ST HIGHEST 8-HR AVERAGE
CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S):
FLARE ,

*** NETWORK ID: UCART1 ; NETWORK
TYPE: GRIDCART ***

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

Y-COORD (METERS)	X-COORD (METERS)				
	533182.89	533282.89	533382.89	533482.89	533582.89
4312557.2	3.54532 (10012508)	3.52573 (10012508)	3.85041 (10012508)	3.87673c(10122424)	6.45779c(10012108)
4312457.2	4.59679b(12012224)	4.13978b(12012224)	4.71071 (10012508)	4.89416 (10012508)	6.10229 (10012508)
4312357.2	4.93133b(12012224)	5.24860b(12012224)	5.33238b(12012224)	6.32886b(12012224)	6.04591 (10012508)
4312257.2	3.34698b(12012224)	4.03796b(12012224)	4.71912b(12012224)	5.50620b(12012224)	6.68842b(12012224)
4312157.2	2.76654b(12122824)	2.83748b(12122824)	2.97586b(12122824)	3.15539b(12122824)	3.97683b(12012224)
4312057.2	2.42731b(12122824)	2.61152b(12122824)	2.92830b(12122824)	3.28236b(12122824)	3.65050b(12122824)
4311957.2	1.70154c(12100608)	1.78786c(10122308)	1.92355c(10122308)	2.21287b(12122824)	2.58604b(12122824)
4311857.2	1.71175c(12110824)	1.63531c(12110824)	1.55812b(12122008)	1.68408b(12122008)	1.82635b(12122008)
4311757.2	1.83750b(11022024)	1.93853b(11022024)	2.04426b(11022024)	2.15274b(11022024)	2.26092b(11022024)
4311657.2	1.84974b(11070224)	1.91517b(11070224)	1.96161b(11070224)	1.97986b(11070224)	1.96446c(11071708)
4311557.2	1.96972c(11071708)	2.06438c(11071708)	2.13305c(11071708)	2.16730c(11071708)	2.28031c(12021024)
4311457.2	1.92990c(12021024)	2.02317c(12021024)			

2.05475c(12021024) 2.04752c(10100224) 2.05340c(10100224)
 4311357.2 | 1.79701c(10100224) 1.79100c(09012624)
2.04511c(09012624) 2.16865c(09012624) 2.07848c(09012624)
 4311257.2 | 2.04148c(09012624) 2.02509c(09012624)
1.86972c(12012208) 2.07396c(12012208) 2.09716c(12012208)
 4311157.2 | 1.76325c(12012208) 1.88638c(12012208)
1.86649c(12012208) 1.93724c(09022424) 1.91726c(09022424)
 4311057.2 | 1.65639c(12012208) 1.71050c(09022424)
1.70399c(09022424) 1.84520c(10020116) 1.89687c(10020116)
 4310957.2 | 1.56391c(09110924) 1.67059c(09110924)
1.70936c(10020116) 1.65949b(12050108) 1.95353b(12050108)
 4310857.2 | 1.67774c(11033008) 1.51251c(10020116)
1.67242b(12050108) 1.82502b(12050108) 2.23552c(12021924)
 4310757.2 | 1.40371b(12050108) 1.62118b(12050108)
1.66420b(12050108) 2.33578c(12021924) 3.28258c(12021924)
 4310657.2 | 1.53030b(12050108) 1.66583b(09070808)
2.40077c(12021924) 3.23395c(12021924) 3.51883c(12021924)
 4310557.2 | 1.74023b(09070808) 2.43689c(12021924)
3.16356c(12021924) 3.35791c(12021924) 2.98793c(13041108)

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE 1ST HIGHEST 8-HR AVERAGE
CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S):
FLARE ,

*** NETWORK ID: UCART1 ; NETWORK
TYPE: GRIDCART ***

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

Y-COORD (METERS)	X-COORD (METERS)				
	533682.89	533782.89	533882.89	533982.89	534082.89
4312557.2	2.61701c(10122424)	2.01574c(10011624)	2.07938c(10011624)	1.75496b(09121124)	2.28079 (10020524)
4312457.2	4.45179c(10012108)	3.19737c(10122424)	2.65349c(10122424)	2.44649c(10011624)	2.01706c(10011624)
4312357.2	7.79613 (10012508)	5.94651 (10012508)	3.32639c(10122424)	3.07947c(10122424)	2.72977c(10011624)
4312257.2	6.96859b(12012224)	9.07437 (10012508)	6.95894 (10012508)	2.75964c(10122424)	3.39945c(10122424)
4312157.2	4.85192b(12012224)	6.74724b(12012224)	10.58208b(12012224)	3.48769m(11010124)	2.36786m(11010124)
4312057.2	4.06605b(12122824)	4.62589b(12122824)	5.87300b(12122824)	5.15443m(11010124)	4.72323m(11010124)
4311957.2	3.03777b(12122824)	3.60192b(12122824)	4.83564b(12122824)	6.33508b(12122824)	5.46148b(12122824)
4311857.2	1.98701b(12122008)	2.16866b(12122008)	2.38302b(12122008)	3.15510c(10012524)	4.35664c(10012524)
4311757.2	2.36386b(11022024)	2.45358b(11022024)	2.51740b(11022024)	2.53569b(11022024)	3.08919b(11010208)
4311657.2	2.02938c(11071708)	2.17344b(11010208)	2.53763b(11010208)	2.98510b(11010208)	3.59868b(11010208)
4311557.2	2.41313c(12021024)	2.42237c(12021024)	2.56164b(11010208)	2.84706b(11010208)	3.06473b(11010208)
4311457.2	2.07871c(09012624)	2.16812c(09012624)			

2.30359c(11030308) 2.48232c(12012208) 2.76463c(09022424)
 4311357.2 | 2.22630c(12012208) 2.32537c(12012208)
2.49468c(09022424) 2.47720c(10020116) 2.58865c(10020116)
 4311257.2 | 2.20198c(09022424) 2.15234c(09022424)
2.38143c(10020116) 2.38501b(12050108) 2.58173c(12021924)
 4311157.2 | 2.10736c(10020116) 2.06183c(10020116)
2.35136b(12050108) 2.85917c(12021924) 3.84901c(12021924)
 4311057.2 | 2.01228b(12050108) 2.17519b(12050108)
3.06681c(12021924) 3.87031c(12021924) 4.44537c(13041108)
 4310957.2 | 2.09198c(12021924) 3.22631c(12021924)
3.86073c(12021924) 4.11042c(13041108) 4.37700c(13041108)
 4310857.2 | 3.30029c(12021924) 3.82842c(12021924)
3.79145c(13041108) 4.08768c(13041108) 4.69838b(13061808)
 4310757.2 | 3.67880c(12021924) 3.49717c(13041108)
3.79775c(13041108) 3.90789b(13061808) 5.12527b(13061808)
 4310657.2 | 3.22944c(13041108) 3.52146c(13041108)
3.27234b(13061808) 4.42554b(13061808) 4.86225b(13061808)
 4310557.2 | 3.26509c(13041108) 3.07638c(13041108)
3.81156b(13061808) 4.40329b(13061808) 4.48867m(09040108)

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE 1ST HIGHEST 8-HR AVERAGE
CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S):
FLARE ,

*** NETWORK ID: UCART1 ; NETWORK
TYPE: GRIDCART ***

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

Y-COORD (METERS)	X-COORD (METERS)				
	534182.89	534282.89	534382.89	534482.89	534582.89
4312557.2	3.11329 (10030124)	3.45704 (10030124)	5.06256 (11021424)	5.36178 (09020524)	5.99488 (09110524)
4312457.2	2.69736 (10020524)	3.77589 (10030124)	4.12222 (10012024)	6.59560 (09020524)	6.86613 (09110524)
4312357.2	2.64302c(10011624)	3.22660 (10020524)	4.68995 (10030124)	5.94731 (10012024)	7.42022 (12031224)
4312257.2	3.48601c(10122424)	3.38494c(10011624)	3.93553 (10020524)	6.05156 (10030124)	9.06561 (09050424)
4312157.2	3.07818c(10122424)	4.18470c(10122424)	3.99521c(10011624)	4.86944 (10020524)	8.11501 (10030124)
4312057.2	4.60002m(11010124)	3.98872m(11010124)	4.24042m(11031924)	5.19687m(11031924)	7.44578 (13071608)
4311957.2	4.07617m(11010124)	5.49717m(11010124)	8.03640m(11010124)	14.99452b(12012224)	29.76132 (10012508)
4311857.2	14.35489b(12010724)	17.51321c(09120308)	9.41737c(11021324)	10.70634c(10012524)	14.40884m(11010124)
4311757.2	4.26433b(11010208)	5.66226b(11010208)	5.91076b(11010208)	6.71478b(11010208)	7.27557b(11010208)
4311657.2	4.16856b(11010208)	5.05380b(11010208)	5.01472b(11010208)	4.08987b(11010208)	6.47098c(10100724)
4311557.2	3.06640b(11010208)	2.83292c(09022424)	3.58433c(09040208)	3.96256b(13041508)	12.43176 (09100308)
4311457.2	2.75492c(10020116)	3.02952c(09040208)			

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3.33544c(12021924)      6.82072 (09100308)     15.72993 (09100308)
 4311357.2 |      2.66655b(12050108)      3.65894c(12021924)
5.07122c(13041108)      8.55186b(13061808)     11.59792m(09040108)
 4311257.2 |      3.78987c(12021924)      5.05814c(13041108)
6.84937b(13061808)      9.36518m(09040108)     10.60050c(13041408)
 4311157.2 |      4.77239c(13041108)      5.43898b(13061808)
8.11283b(13061808)      8.65843m(09040108)      9.94363c(13041408)
 4311057.2 |      4.63396c(13041108)      6.83902b(13061808)
7.57612m(09040108)      8.36635c(13041408)      8.45374c(13041408)
 4310957.2 |      5.67335b(13061808)      6.61931b(13061808)
6.73026m(11042624)      7.87235c(13041408)      6.91834c(13041408)
 4310857.2 |      5.88267b(13061808)      6.07368m(09040108)
6.63121c(13041408)      6.95316c(13041408)      5.58305c(13041408)
 4310757.2 |      5.32777m(09040108)      5.86478m(11042624)
6.31466c(13041408)      5.94719c(13041408)      4.58249 (12060808)
 4310657.2 |      4.92359m(09040108)      5.52192m(11042624)
5.73124c(13041408)      5.01996c(13041408)      4.37135c(13041224)
 4310557.2 |      5.08889m(11042624)      5.17362c(13041408)
5.05352c(13041408)      4.26909c(09061424)      4.42083c(13041224)
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*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE 1ST HIGHEST 8-HR AVERAGE
CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S):
FLARE ,

*** NETWORK ID: UCART1 ; NETWORK
TYPE: GRIDCART ***

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

Y-COORD (METERS)	X-COORD (METERS)				
	534682.89	534782.89	534882.89	534982.89	535082.89
4312557.2	5.97428 (12121624)	6.05824 (12033008)	2.78347b(10120508)	3.40940m(12031924)	1.67913c(13030608)
4312457.2	6.84272m(10041208)	7.45152 (12033008)	3.22030m(11082024)	3.45668m(12031924)	2.03445c(09032124)
4312357.2	9.16586 (12122024)	9.21270 (12033008)	3.81904m(11082024)	3.11625m(12031924)	2.42332c(09032124)
4312257.2	10.83587 (12122024)	11.09729 (12033008)	4.45630m(11082024)	3.38665c(13030608)	3.04138 (11051424)
4312157.2	14.06271 (12031224)	15.16827 (11030208)	4.97436m(11082024)	4.43166c(13030608)	4.07029 (11051424)
4312057.2	15.22290 (09050424)	21.76060 (12122024)	8.16074b(11111116)	5.78974 (11051424)	6.37759c(12102324)
4311957.2	25.10676c(10011624)	80.40718 (12031224)	55.59291c(10100608)	25.65551c(11011224)	36.03074b(09021608)
4311857.2	26.74167m(11010124)	55.84628c(09021816)	82.60024b(12062516)	27.36435m(10033008)	29.49160c(10011308)
4311757.2	10.28989b(09052716)	33.26380m(13112216)	68.80626 (09102708)	53.85768 (09040224)	17.06897 (09040224)
4311657.2	19.54762 (09100308)	34.18778b(13060124)	43.75137c(10050908)	68.39582c(10092208)	47.64909c(10021424)
4311557.2	20.68809 (09100308)	19.63514 (13070508)	22.19492c(10050908)	23.69102b(09061008)	27.65383c(13030224)
4311457.2	13.09875c(13041408)	15.17334 (12052324)			

```
18.71683c(10050908)     20.89791c(10050908)     37.52467c(13010908)
 4311357.2 |     11.98391c(13041408)     12.75298 (12052324)
14.56083 (10032124)     19.15326c(10050908)     12.62492b(09061008)
 4311257.2 |      9.76430c(13041408)     12.69798c(11052024)
12.79307 (10032124)     14.29752c(10050908)     11.50200b(09061008)
 4311157.2 |      7.89342 (12060808)      8.85297c(12032208)
8.66134 (10032124)     12.50210c(10050908)     10.01143c(10050908)
 4311057.2 |      6.68719 (12060808)      8.52495c(12032208)
9.80302 (11052724)      9.39470c(10050908)      7.72104c(10050908)
 4310957.2 |      5.82128c(13041224)      7.32255c(12032208)
7.59792 (11052724)      6.85207 (11052724)      6.75916b(12062308)
 4310857.2 |      5.43843c(11011724)      6.58554c(12032208)
6.16990 (11052724)      6.22284 (11052724)      5.92680b(12062308)
 4310757.2 |      5.33813c(11011724)      5.92524c(12032208)
5.31292 (11052724)      5.67101 (11052724)      5.65649c(13120708)
 4310657.2 |      5.06895c(11011724)      5.35065c(12032208)
4.75260 (11052724)      5.16796 (11052724)      5.81383c(13120708)
 4310557.2 |      4.71436c(11011724)      4.85609c(12032208)
4.29202 (11052724)      4.74002 (11052724)      5.69886c(13120708)
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*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE 1ST HIGHEST 8-HR AVERAGE
CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S):
FLARE ,

*** NETWORK ID: UCART1 ; NETWORK
TYPE: GRIDCART ***

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

Y-COORD (METERS)	X-COORD (METERS) 535182.89
4312557.2	1.73921c(11051624)
4312457.2	2.14264c(11051624)
4312357.2	2.97439 (11051424)
4312257.2	2.78565 (11051424)
4312157.2	4.34127c(12102324)
4312057.2	3.05596c(10120316)
4311957.2	3.38721c(11053124)
4311857.2	16.72277c(10011308)
4311757.2	9.57268 (09012424)
4311657.2	10.84992 (09040224)
4311557.2	14.44385 (10122908)
4311457.2	13.41758 (10122908)
4311357.2	11.57990b(13022308)
4311257.2	7.78544b(13022308)
4311157.2	6.38612m(10022024)
4311057.2	6.86924m(10022024)
4310957.2	6.28436m(10022024)
4310857.2	5.89764m(12052224)
4310757.2	5.35559b(12062308)
4310657.2	4.83347b(12062308)
4310557.2	4.40252b(12062308)

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE 1ST HIGHEST 8-HR AVERAGE
CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S):
FLARE ,

*** DISCRETE CARTESIAN
RECEPTOR POINTS ***

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

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
533957.00	4311882.00	3.40778b	(09021524)
533711.00	4311848.00	2.06583b	(12122008)
534870.00	4311815.00	17.84331c	(09081316)
534770.00	4311705.00	30.53717	(09100308)
534670.00	4311412.00	12.78417c	(13041408)
534508.00	4311155.00	8.86698c	(13041408)
534370.00	4311299.00	5.36235c	(13041108)
534330.00	4311410.00	3.46348c	(12021924)
534280.00	4311755.00	5.73222b	(11010208)
534761.00	4311925.00	51.37874	(12112908)
534836.67	4311778.33	50.34305m	(12062116)
534803.33	4311741.67	38.89707	(11071024)
534755.71	4311663.14	27.88202	(09100308)
534741.43	4311621.29	23.78673	(09100308)
534727.14	4311579.43	19.77143b	(13060124)
534712.86	4311537.57	17.08151b	(13060124)
534698.57	4311495.71	14.63542b	(13060124)
534684.29	4311453.86	13.13320c	(13041408)
534646.86	4311375.29	12.21316c	(13041408)
534623.71	4311338.57	11.61200c	(13041408)
534600.57	4311301.86	11.01737c	(13041408)
534577.43	4311265.14	10.45008c	(13041408)
534554.29	4311228.43	9.91142c	(13041408)
534531.14	4311191.71	9.40667c	(13041408)
534473.50	4311191.00	9.11100m	(09040108)
534439.00	4311227.00	8.83772b	(13061808)

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        534404.50   4311263.00        7.59437b (13061808)
534356.67   4311336.00        5.09418c (13041108)
        534343.33   4311373.00        4.01402c (13041108)
534322.86   4311459.29        3.08639b (11041024)
        534315.71   4311508.57        3.31127c (09040208)
534308.57   4311557.86        2.82042c (09022424)
        534301.43   4311607.14        4.11394b (11010208)
534294.29   4311656.43        5.36737b (11010208)
        534287.14   4311705.71        5.83039b (11010208)
534323.73   4311770.45        5.73881b (11010208)
        534367.45   4311785.91        5.96226b (11010208)
534411.18   4311801.36        6.59669c (10012524)
        534454.91   4311816.82        8.12769c (10012524)
534498.64   4311832.27        9.74701c (10012524)
        534542.36   4311847.73       10.93491c (10012524)
534586.09   4311863.18       16.81112m (11010124)
        534629.82   4311878.64       25.92500m (11010124)
534673.55   4311894.09       31.16275m (11010124)
        534717.27   4311909.55       31.27486m (12020616)
534788.25   4311897.50       69.91532  (12112908)
        534815.50   4311870.00       83.95944  (11091116)
534842.75   4311842.50        3.64569c (11091016)
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*** MODELOPTs: RegDFAULT CONC ELEV RURAL

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

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

NETWORK GROUP ID	AVERAGE CONC	DATE (YYMMDDHH)	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	GRID-ID
ALL	HIGH 1ST HIGH VALUE IS	289.64442	ON 12122201: AT (534882.89, 4311857.16, 530.80, 655.00, 0.00)	GC	UCART1

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

*** MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE SUMMARY OF HIGHEST 8-HR RESULTS ***

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

NETWORK GROUP ID	AVERAGE CONC	DATE (YYMMDDHH)	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	GRID-ID
ALL	HIGH 1ST HIGH VALUE IS	83.95944	ON 11091116: AT (534815.50, 4311870.00, 522.49, 655.00, 0.00)	DC	

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

 *** MODELOPTs: RegDFAULT CONC ELEV RURAL

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

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

 A Total of   0 Fatal Error Message(s)
 A Total of   0 Warning Message(s)
 A Total of   25405 Informational Message(s)

 A Total of   43872 Hours Were Processed

 A Total of   23161 Calm Hours Identified

 A Total of   2244 Missing Hours Identified (5.11 Percent)

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

    ********   WARNING MESSAGES   ********
               *** NONE ***

    ****
    *** AERMOD Finishes Successfully ***
    ****

3B. Carbon Monoxide Results Summary

Results Summary

C:\Users\4756dlw\Documents\Projects\Eastlake LF Expansion\AERMOD\Eas

CO - Concentration - Source Group: ALL

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	1ST	289.64442	ug/m^3	534882.89	4311857.16	530.80	0.00	655.00	12/22/2012, 1
8-HR	1ST	83.95944	ug/m^3	534815.50	4311870.00	522.49	0.00	655.00	9/11/2011, 16