SESPE CONSULTING, INC.

374 Poli Street, Suite 200 • Ventura, California 93001

AIR QUALITY, CLIMATE CHANGE IMPACT AND HEALTH RISK ASSESSMENT

Agromin
Commercial Organics Processing Operation
Edwards Ranch Road
Santa Paula, California 93060

May 20, 2017

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County of Ventura
Notice of Preparation of an EIR
PL17-0154
Attachment 4 - Air Quality Analysis, Climate Change Impact and Health Risk Assessment and Update Memo

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EXECUTIVE SUMMARY

This Air Quality and Climate Change Impact Assessment (AQCCIA) has been prepared to quantify and determine the significance of air quality and climate change impacts associated with the construction and operation of Agromin's proposed Commercial Organics Processing Operation (Facility) located near the City of Santa Paula, Ventura County, California. Agromin is proposing to expand their existing 15-acre agricultural composting operation into a 70-acre commercial composting facility (Project). This AQCCIA follows methodologies and guidance presented in the Ventura County Air Pollution Control District's (VCAPCD) *Ventura County Air Quality Assessment Guidelines*.

Criteria pollutant, greenhouse gas (GHG), and toxic air contaminant (TAC) emissions resulting from both the construction and operation of the proposed Facility are quantified and compared to the appropriate significance thresholds within this AQCCIA. This AQCCIA also qualitatively addresses Project consistency with the Ventura County *Air Quality Management Plan* (AQMP), fugitive dust impacts, carbon monoxide, and odor impacts.

This AQCCIA has the following findings:

- The Project results in less than significant Construction phase emissions impacts with standard mitigation measures.
- The Project results in beneficial regional criteria pollutant impacts.
- The Project results in beneficial greenhouse gasses impacts.
- The Project results in less than significant localized health risk impacts.
- The Project is consistent with the Ventura County Air Quality Management Plan.
- The Project results in less than significant fugitive dust impacts.
- The Project results in less than significant odor impacts.
- The Project results in less than significant localized carbon monoxide impacts.

AIR QUALITY AND CLIMATE CHANGE IMPACT ASSESSMENT

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AIR QUALITY AND CLIMATE CHANGE IMPACT ASSESSMENT

Agromin
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May 20, 2017

1.0 INTRODUCTION

This Air Quality and Climate Change Impact Assessment (AQCCIA) has been prepared to quantify and determine the significance of air quality and climate change impacts associated with the construction and operation of Agromin's proposed Commercial Organics Processing Operation (Facility) located near the City of Santa Paula, Ventura County, California. Agromin is proposing to expand their existing 15-acre agricultural composting operation into a 70-acre commercial composting facility (Project). This AQCCIA follows methodologies and guidance presented in the Ventura County Air Pollution Control District's (VCAPCD) *Ventura County Air Quality Assessment Guidelines*.

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2.0 PROJECT DESCRIPTION

This section presents the portions of the Project Description that are applicable to air quality. For more detailed and complete Project information, please see the Project Description.

2.1 Project Operation

The Project is located at the south end of Edwards Ranch Road in unincorporated Ventura County, south of the City of Santa Paula (see Figure 1, Appendix A). Agromin currently operates the site as a 15-acre green and agricultural materials compost facility, called the Limoneira/Agromin Agricultural Composting Operation, which processes approximately 55,000 tons of green material per year. Current operations here include material receiving and sorting, pre-processing using a grinder and trommel screens, and composting of organics in open windrows. The Project involves transforming this existing 15-acre operation into a 70-acre commercial composting facility.

Also as part of the Project, Agromin will close down their existing compost facility located in Oxnard, commonly known as the Oxnard-Shoreline facility, transferring all operations to the new Facility in Santa Paula. Current operations at the Oxnard-Shoreline facility include feedstock receiving and sorting, pre-processing using grinders and trommel screens, green material composting in open windrows, food materials composting using a Covered Aerated Static Pile (CASP) pilot program, as well as bagging and bulk sales activities. Many of the existing operations at the 11-acre Oxnard-Shoreline facility (e.g. windrow composting, preprocessing and grinding, bagging and bulk sales, mobile and stationary processing equipment, etc.) are the same operations proposed for this Project.

Once constructed, the new Facility will process and compost approximately 295,000 tons per year of green and food materials, using a combination of open windrows, Covered Aerated Static Piles (CASP), and Anaerobic Digesters (AD). Feedstock material will be collected from various residential and commercial sources throughout Ventura County as well as the City of Carpentaria and delivered to the Facility via haul trucks for processing. The Facility will also receive additional feedstocks from self-haulers (e.g. landscapers, contractors, residents) as well as shipments of soil amendment products (e.g. peat moss, gypsum, mulch, etc.) which are blended with compost to produce specialty organic products. Once received, green and food material feedstocks will be sorted and screened, then processed in chippers and grinders prior to composting. Processed green materials will be composted in open windrows while a combination of food and green materials will be composted within the CASP and AD systems. Finished products are either sold onsite in bulk or are bagged/packaged onsite for sale to retail outlets throughout the County. See Figure 2 for a site plan and Figure 3 for a process flow diagram in Appendix A, which display the Facility layout and processing operations.

The Project includes the following sources of criteria pollutant, greenhouse gas (GHG), and toxic air contaminant (TAC) emissions:

- **Stationary Equipment/Processes –** The following stationary sources are part of the Project:
    - **Open Windrows –** Open windrow composting will be greatly expanded at the new Facility, processing approximately 180,000 tons of green and agricultural materials per year. Open windrows aerobically compost feedstock material in elongated piles. Green and agricultural material “unders” generated after chipping and grinding are formed into windrow piles using front-end loaders. Emissions from open windrows result from decomposition of organic materials within the piles.

- **Covered Aerated Static Pile (CASP) –** Two (2), eight-bay CASP systems will be installed in the southeast portion of the Facility to aerobically decompose up to 75,000 tons per year of mixed green and food material feedstocks into compost. The CASP systems will incorporate a GORE™ Cover System, a concrete in-floor aeration system, aeration blowers, oxygen/temperature control systems, and a cover handling system. The GORE™ Cover System is a multi-layer laminate cover that can achieve up to 97% reduction in odor concentrations. Feedstocks will be placed in the open CASP "bunkers" with a front-end loader. Leachate from the CASP is collected via drainage channels and reused to water the piles in a closed loop system. The CASP process takes approximately 22 days to complete. Emissions will be generated from the top of the pile as well as during pile buildup, turning and breakdown using front-end loaders.
- **Anaerobic Digester (AD) –** Four (4), four-bay AD units will be installed in the southeast portion of the Facility to compost up to 40,000 tons per year of mixed green and food materials within a state-of-the-art dry system for organic waste processing in a non-continuous "batch" process. Agromin is proposing to install SmartFerm® AD systems designed and manufactured by Zero Waste Energy (ZWE). Feedstocks will be placed into the AD chambers using front-end loaders, where microorganisms will decompose the material into useable compost within a completely enclosed system. In addition to composting, the system also collects produced biogas which can be converted to compressed natural gas (CNG) and used to fuel an internal combustion combined heat and power (CHP) engine that will generate electrical power. This power can then be used to serve the parasitic loads of the system as well as support other facility operations. A portion of the biomethane may also be used to produce compressed natural gas (CNG) or liquefied natural gas (LNG) for use as transportation fuel within trash collection trucks. Microorganism percolate is applied to the feedstocks to promote decomposition then collected and reused within a close loop system. Each AD batch takes approximately 21 days total to process. The primary AD emissions sources are the 100kW CHP engine and a waste gas flare.

- **Mobile Equipment –** Mobile sources of emissions are not permitted by the VCAPCD. The following mobile sources are associated with the Project:
  - **Off-Road Equipment –** Agromin proposes to utilized the following off-road mobile equipment at the Facility (also see Appendix C for more details):
    - Six (6), 211 HP, Tier 4, Wheeled Loaders operating 7.5 hours/day
    - One (1), 71 HP, Tier 4, Skid Steer Loaders operating 7.5 hours/day
    - One (1), 630 HP, Tier 4, Windrow Pile Turners operating 7.5 hours/day
    - Two (2), 51 HP, Tier 3, Forklifts operating 7.5 hours/day
    - Two (2), 375 HP, Trucks (one water truck & one dump truck) operating 7.5 hours/day
    - Two (2) Grinders
      - One (1) 1050 HP, Tier 4i (green material) operating 6.5 hours/day
      - One (1) 650 HP, electrified (food material) operating 7.5 hours/day
    - Five (5) Screens
      - Two (2) 97 HP, Tier 3 operating 6.5 hours/day
      - Three (3) 140 HP, electrified operating 6.5 hours/day

    The facility is also proposing to utilize conveyor belts to move ground green material to centralized staging pads in the windrow areas. This will reduce the amount of loader time needed to move green material around the site.

- **Haul Trucks –** The Project utilizes haul trucks (front/side loaders, semi-transfer trailers, flatbed/roll-off, etc.) to transport green and food material feedstocks to the Facility as well as transfer finished products from the Facility. Haul truck trips proposed for the Project total average is estimated at 323 loads (646 one-way trips) per day.
- **Employee and Visitor Vehicles –** Employees and visitors will travel to and from the Facility in passenger vehicles. The Project includes a total of 124 one-way worker trips per day.

Table 1 compares the operation hours of the existing 15-acre Limoneira/Agromin Agricultural Composting Operation to the proposed Project. See Appendix B for a list of activity level assumptions utilized to calculate the Project emissions.

Table 1 Facility Operating Hours

Operation/Activity	Existing (Limoneira/Agromin Agricultural Composting Operation)		Proposed (Commercial Organics Processing Operation)	
	Days/Week	Hours of Operation	Days/Week	Hours of Operation
Waste Receiving	Mon. – Fri.	6:00 AM – 6:00 PM	Mon. – Sat.	7:00 AM – 5:00 PM
Outdoor Processing	Mon. – Fri.	6:00 AM – 6:00 PM	Mon. – Sun.	6:00 AM – 6:00 PM
Material Processing Buildings	---	---	Mon. – Sun.	6:00 AM – 10:00 PM
Packaging	---	---	Mon. – Sat.	6:00 AM – 10:00 PM
Maintenance	---	---	Mon. – Sat.	7:00 AM – 5:00 PM
Office	---	---	Mon. – Fri.	7:00 AM – 5:00 PM

2.2 Project Construction

Facility construction is expected to begin in early 2019, following Project approval. The existing 15-acre operation will be significantly expanded to accommodate the new Facility structures and organics processing operations. Primary construction activities include removal of existing vegetation and agricultural fields, minor grading of the site, installation of building foundations and compost area working surfaces, construction of the buildings and retention basins, and installation of processing equipment. Construction equipment anticipated to be utilized includes graders, excavators, dozers, backhoes, front-end/skid steer loaders, and dump trucks. Based on estimates provided by Agromin, the entire construction phase is anticipated to last approximately 8 months. Specifically the following construction activities and schedules are proposed:

- **Demolition (14 Days):** Approximately 55 acres of the Project site is currently active orchards and row crops, which will need to be removed to accommodate the expanded Project. Portions of the existing 15-acre compost facility will also need to be demolished/cleared.
- **Site Preparation (21 Days):** Following clearing of existing agricultural fields/vegetation, construction materials and equipment will be brought onsite. Existing compost equipment and areas not demolished will be temporarily relocated to allow for the construction of the new Facility structures and compost working surfaces.
- **Grading (28 Days):** The Project area is nearly flat, however minor grading will be required across the entire 70-acre site to prepare the working surface and building areas. Additionally, two (2) retention basins will be excavated along the south boundary of the Facility. A system of underground storm drains connecting to the basins may also be trenched throughout the Facility during the grading phase.

- **Building Construction (90 Days):** The Dry Organics and Wet Organics Buildings, Administration Building, Production Building (i.e. Packaging Building), and Maintenance Building will be constructed. Working surfaces for windrow composting areas as well as the CASP and AD systems are also expected to be installed during this construction phase. Ancillary equipment such as the scale house, staging pads and tipping areas, as well as utility structures (e.g. utility pad and transformers) may also be installed during the building phase.
- **Architectural Coatings (60 Days):** Following construction of the buildings, painting and finishing of surfaces will occur. This phase may also entail treating of the native soil with cement in the open windrow composting areas. Portions of architectural coatings phase may occur concurrently with the building and paving construction phases.
- **Paving (21 Days):** Portions of the site will be paved with either cement or asphalt concrete to accommodate vehicle and equipment operations. Parking spaces for employees and visitors will be installed adjacent to the scale house near the administration and maintenance buildings. Portions of the paving phase may occur concurrently with the building and architectural coatings phases.

3.0 EXISTING SETTING

3.1 Regulatory Setting

This section discusses the Federal, State, and local air quality regulations applicable to the Project. These air quality regulations and standards form the basis of the significance thresholds described in Section 4 within this AQCCIA.

3.1.1 Federal

The Federal Clean Air Act (CAA) provides the principal framework for national, state, and local efforts to protect air quality. Under the Clean Air Act, the United States Environmental Protection Agency (USEPA) is responsible for setting standards, also known as National Ambient Air Quality Standards (NAAQS), for pollutants that are considered harmful to people and the environment.

A group of common air pollutants that have detrimental effects on human health, harm the environment, and cause property damage are called criteria air pollutants because the EPA has established health-based criteria for their regulation. One set of criteria (the primary standard) protects health; another set of criteria (the secondary standard) is intended to prevent environmental and property damage. A geographic area that meets or does better than the primary standard is called an attainment area while areas that don't meet the primary standard are called nonattainment areas. Each state containing nonattainment areas is required to develop a written plan for cleaning the air in those areas. These plans are called state implementation plans (SIP).

Areas that do not meet the federal one-hour ozone standard are classified according to the severity of each area's respective ozone problem. Ozone classifications include: Marginal, Moderate, Serious, Severe, and Extreme. Marginal areas are closest to meeting the federal one-hour ozone standard. Extreme areas have the worst air quality problems. Areas with more severe ozone problems have progressively more stringent requirements to meet under the federal CAA.

3.1.2 California

The California Clean Air Act (CCAA) was enacted on September 30, 1988, and became effective January 1, 1989. The purpose of the CCAA is to achieve the health-based state clean air standards at the earliest possible date. The state standards are more stringent than the federal air quality standards. Table 2 below presents the Federal and State Ambient Air Quality Standards (AAQS).

Table 2 State and Federal AAQS

Pollutant	Averaging Time	California Standard	Federal Standards	
			Primary	Secondary
Ozone (O_3)	1 Hour	0.09 ppm (180 µg/m^3)	---	Same as Primary Std.
	8 Hour	0.070 ppm (137 µg/m^3)	0.070 ppm (137 µg/m^3)	
Respirable Particulate Matter (PM_{10})	24 Hour	50 µg/m^3	150 µg/m^3	Same as Primary Std.
	AAM	20 µg/m^3	---	
Fine Particulate Matter ($PM_{2.5}$)	24 Hour	---	35 µg/m^3	Same as Primary Std.
	AAM	12 µg/m^3	12 µg/m^3	15 µg/m^3
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	---
	8 Hour	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)	---	
Lead	30 day average	1.5 µg/m^3	---	---
	Calendar Quarter	---	1.5 µg/m^3*	Same as Primary Std.
	Rolling 3-Month Avg.	---	0.15 µg/m^3	

Pollutant	Averaging Time	California Standard	Federal Standards	
			Primary	Secondary
Nitrogen Dioxide (NO_2)	1 Hour	0.18 ppm (339 µg/m^3)	100 ppb (188 µg/m^3)	---
	AAM	0.030 ppm (57 µg/m^3)	0.053 ppm (100 µg/m^3)	Same as Primary Std.
Sulfur Dioxide (SO_2)	1 Hour	0.25 ppm (655 µg/m^3)	75 ppb (196 µg/m^3)	---
	3 Hour	---	---	0.5 ppm (1,300 µg/m^3)
	24 Hour	0.04 ppm (105 µg/m^3)	0.14 ppm (365 µg/m^3)*	---
	AAM	---	0.030 ppm (80 µg/m^3)*	---
Visibility Reducing Particulates	8 Hour	Extinction coefficient of 0.23 per kilometer Statewide and 0.07 per kilometer for the Lake Tahoe Air Basin.	No Federal Standards	
Sulfates	24 Hour	25 µg/m^3		
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)		
Vinyl Chloride	24 Hour	0.01 ppm (26 µg/m^3)		

AAM = Annual Arithmetic Mean
* For certain areas only.
Source: www.arb.ca.gov/research/aaqs/aaqs2.pdf (2/7/2017) See this source for additional information regarding the AAQS.

Toxic air contaminants (TAC) are pollutants listed by the State of California that pose acute, chronic, and/or cancer health risks to exposed individuals. The Office of Environmental Health Hazard Assessment (OEHHA) is responsible for research and identification of TACs.

CARB is responsible for implementing airborne toxic control measures (ATCM) to reduce TAC emissions. While ATCMs have been enacted for a number of different TACs, the most important ATCMs with respect to this Facility are the diesel ATCMs. Diesel ATCMs have been promulgated to control diesel emissions from heavy duty on-road vehicles, off-road equipment, generators, and other sources that burn diesel. The regulations phase in progressively more stringent emissions standards over time, requiring equipment operators to retrofit, replace, and retire equipment to meet the standards.

In 1987, the AB 2588 air toxics “hot spots” program was established. This program requires subject facilities to report their air toxics emissions, determine localized health risks, and notify nearby residents of significant risks. The program was amended in 1992 to require facilities to reduce any significant risks through the development of a risk management plan. The Hotspots Analysis and Reporting Program (HARP) is a tool that is used to assist with calculating TAC emission inventories and performing health risk assessments under the AB 2588 Program.

Diesel particulate matter (DPM) is identified as a TAC and accounts for roughly 70% of the cancer risk from air pollution in urban areas where on-road sources dominate the inventory. Diesel engines are a ubiquitous source and thus it is not surprising that stationary source TAC effects "are generally much lower than region-wide risk levels, region-wide risks tend to overwhelm any potential local ‘hot spots.’" (SCAQMD Mates II Study, Section 7.3).

The On-Road Heavy Duty Diesel Vehicle (In-Use) Regulation was adopted in December 2010. The regulation requires diesel trucks and buses that operate in California to be upgraded to reduce emissions. Heavier trucks must be retrofitted with PM filters beginning January 1, 2012, and older trucks must be replaced starting January 1, 2015. By January 1, 2023, nearly all trucks and buses will need to have 2010 model year engines or equivalent. The regulation applies to nearly all privately and federally owned diesel fueled trucks and buses and to privately and publicly owned school buses with a gross vehicle weight rating (GVWR) greater than 14,000 pounds.

3.1.3 Local

This Project is located within the Ventura County Air Pollution Control District's (VCAPCD) jurisdiction. In 2003, the VCAPCD published a CEQA advisory document entitled Ventura County *Air Quality Assessment Guidelines* (CEQA Guidelines) in order to provide lead agencies, consultants, and project applicants with a framework and uniform methods for preparing air quality evaluations for environmental documents. This AQCCIA follows the methodologies outlined in the CEQA Guidelines.

At the Ventura County Air Pollution Control Board's request, the VCAPCD has also published *Greenhouse Gas Thresholds of Significance Options for Land Use Development Projects in Ventura County* (GHG Guidance) in 2011. However, the Ventura County Air Pollution Control Board has not yet adopted a significance threshold for GHG emissions and the CEQA Guidelines have not been updated to include GHG assessment methodologies.

In 2017, the VCAPCD updated their *Air Quality Management Plan* (AQMP) to satisfy the planning requirements of the California Clean Air Act. The AQMP presents Ventura County's strategies for attaining the 2008 federal 8-hour ozone standard. It contains an attainment demonstration showing that Ventura County will attain the 2008 federal 8-hour ozone standard by 2020, Ventura County's official ozone attainment year under the CAAA.

3.1.4 Criteria Pollutants

As shown in Table 2, criteria air pollutants include sulfur oxides (SO_x), nitrogen oxides (NO_x), particulate matter (PM), carbon monoxide (CO), lead (Pb), and ground-level ozone (O_3). Ventura County is an attainment area for all criteria pollutant standards shown in Table 2, except for the following standards shown in Table 3.

Table 3 Ventura County Nonattainment Pollutants

Pollutant	Standard	Attainment Status
Ozone	1 hour	State Nonattainment
	8 hour	State and Federal Nonattainment
Particulate Matter (PM_{10})	24 Hour	State Nonattainment*
	AAM	
Particulate Matter ($PM_{2.5}$)	24 Hour	
	AAM	

AAM = Annual Arithmetic Mean
* The state does not make separate designations for different particle size particulate matter, but rather designates an area attainment or nonattainment for particulate matter generally.
Source: http://www.vcapcd.org/air_quality_standards.htm (Last checked 2/7/2017).

3.1.5 Toxic Air Contaminants

Toxic air contaminants (TACs) are air pollutants that may reasonably be anticipated to cause cancer, developmental effects, reproductive dysfunction, neurological disorders, heritable gene mutations, or other serious or irreversible acute or chronic health effects in humans. These pollutants generally consist of four types: organic chemicals (i.e. benzene, dioxins, toluene, and percholorethylene), inorganic chemicals (i.e. chlorine and arsenic), fibers (i.e. asbestos), and metals (i.e. mercury, cadmium, chromium, and nickel). Currently, more than 900 substances are regulated TACs under federal, state, and local regulations.

One TAC to which special attention has been paid in recent years is diesel exhaust, or diesel particulate matter (DPM). Diesel exhaust is a complex mixture of gases, vapors, and fine particles. Some of the exhaust components, like arsenic, benzene, and nickel, are known to cause cancer in humans. At least 40 other components are listed by the EPA as hazardous air pollutants (HAPs) and by CARB as TACs. The unit risk value of DPM is the sum of the unit risk values for its toxic components. DPM accounts for roughly 70% of the cancer risk from air pollution in urban areas where on-road sources dominate the inventory.

The EPA's National Air Toxics Assessment (NATA) risk maps show that ambient air in the Project region exhibits a total cancer risk of 33 excess cancer cases per one million people (https://gispub.epa.gov/NATA).

3.1.6 Greenhouse Gasses

Greenhouse gasses (GHGs) in the atmosphere contribute to global warming. The potential adverse impacts of global warming include the exacerbation of air quality problems, a reduction of the quality and supply of water to the state from the Sierra snowpack, a rise in sea levels resulting in the displacement of thousands of coastal businesses and residences, damage to marine ecosystems and the natural environment, and an increase in the incidences of infectious diseases, asthma, and other human health-related problems (AB 1066).

Table 4 below provides a summary of the statewide GHG emissions for 2014 by sector. Carbon dioxide equivalents (CO_2e) is a single unit used to represent all the different GHGs. The variation of effect between gases is known as global warming potential (GWP). Individual GHGs are weighted by their GWP (i.e., their capacity to heat the atmosphere) and then summed to determine the CO_2e. For example, one unit of methane emissions has the same GWP as 21 units of carbon dioxide. Therefore, one (1) metric ton of methane is equivalent to 21 metric tons of CO_2.

Table 4 Summary of California's 2014 GHG Emissions

Sector	CO_2e (million metric tons)	Percentage of Total
Transportation	163.02	37%
Electric Power*	88.37	20%
Commercial & Residential	49.03	11%
Industrial	104.22	24%
Agriculture & Forestry	36.11	8%
Not Specified	0.79	<1%
Total	**441.5**	**100%**

Source: *California Greenhouse Gas Inventory for 2000-2014 — by Category as Defined in the Scoping Plan* (2/7/2017) http://www.arb.ca.gov/cc/inventory/data/data.htm
*Represents electricity generate both in State and imports

3.2 Environmental Setting

The environmental setting includes local topography, meteorology, and air quality conditions in the region, at the proposed Project site, and at nearby receptors.

3.2.1 Meteorology

The air above Ventura County often exhibits weak vertical and horizontal dispersion characteristics, which limit the dispersion of emissions and cause increased ambient air pollutant levels. Persistent temperature inversions prevent vertical dispersion. These temperature inversions act as a "ceiling" that prevents pollutants from rising and dispersing. Mountain ranges act as "walls" that inhibit horizontal dispersion of air pollutants.

The diurnal (daily reoccurring) land/sea breeze pattern common in Ventura County re-circulates air contaminants. Air pollutants are pushed toward the ocean (southwest) during the early morning by the land breeze, and toward the east during the afternoon by the sea breeze. This creates a "sloshing" effect, causing pollutants to remain in the area for several days. Residual emissions from previous days accumulate and chemically react with new emissions in the presence of sunlight, thereby increasing ambient air pollutant levels. This pollutant "sloshing" effect happens most predominantly from May through October ("smog" season). Air temperatures are usually higher and sunlight more intense during the "smog" season. This explains why Ventura County experiences the most exceedances of the state and federal ozone standards during this six-month period.

According to the Western Regional Climate Center (WRCC), the Santa Paula Station (047957) located within 2 miles of the Project site, is the nearest climatological monitoring station. Based on the period of record (7/1/1948 to 12/31/2005), average monthly temperature has ranged from a minimum of 41.0° F to a maximum of 81.7° F. December and January are typically the coldest months with July and August the warmest (WRCC, 2005).

In the winter, low pressure weather systems originating in the northern Pacific Ocean can bring clouds, rain and strong winds into Ventura County. Inland high pressure areas also bring periods of dry, warm offshore "Santa Ana" winds during the fall. The annual rainfall totals approximately 18.07 inches and mostly occurs between November and April (WRCC, 2005). Summer rainfall is minimal and generally limited to very light scattered showers.

3.2.2 Nearby Receptors

Receptors are locations where people are expected to be found (i.e., residences, workplaces, schools, etc.) that could be adversely impacted by the proposed Project. For the purposes of this AQCCIA, receptors have been grouped into separate receptor areas. One receptor in each receptor area (the receptor closest to the sources of Project emissions) is utilized to determine the significance of health risk impacts for all receptors in that receptor area. The residential and workplace receptor areas analyzed in this AQCCIA are described below. See Figures 4 and 5 in Appendix A for the location of the receptor areas.

- **Residential Receptor Areas 1, 2, and 3 (R1 – R3)** include the nearest residential receptors to the Facility. They are located along the southern boundary of the Project.
- **Residential Receptor Areas 4 (R4)** includes the Todd Road Jail to the east of the Project.
- **Residential Receptor Area 5 (R5)** is located along the haul route, near the intersection of Edwards Ranch Road and West Telegraph Road.
- **Residential Receptor Area 6 (R6)** is located along the haul route, on the stretch of West Telegraph Road between Edwards Ranch Road and South Wells Road.
- **Residential Receptor Area 7 (R7)** is located to the west of the Project, near Ellsworth Barranca.
- **Residential Receptor Area 8 (R8)** is located along the haul route, in the densely populated area to the south of West Telegraph Road near South Wells Road.
- **Residential Receptor Areas 9, 10 and 11 (R9 – R11)** are located along the haul route, at the intersection of West Telegraph Road and South Wells Road.
- **Workplace Receptor Area 1 (W1)** includes the nearest workplace to the Facility. It is located at the southwestern corner of the Project.
- **Workplace Receptor Areas 2 and 3 (W2 and W3)** are located along the haul route, at the intersection of Edwards Ranch Road and West Telegraph Road.
- **Workplace Receptor Area 4 (W4)** is south of the Project, in the agricultural area.
- **Workplace Receptor Area 5 (W5)** is located along the haul route, off of South Wells Road.

The Project proposes two paths of travel from the Facility to the freeway, one using South Wells Road to the west and one using Briggs Road to the east. However, the large majority of truck trips will follow the western path using South Wells Road. For the purposes of the health risk assessment in this AQCCIA, all Project haul truck trips are assumed to travel the western path to the freeway (i.e., via South Wells Road). This results in conservative health risk impact results for receptors along that route. Furthermore, if those receptors experience less than significant health risk impacts, the few receptors along the eastern path (who will be exposed to fewer Project haul truck trips) will also be less than significant.

3.3 Project Baseline

3.3.1 Existing Compost Operations

Agromin's existing compost operations in Santa Paula and Oxnard are considered baseline existing sources of emissions since both operations will be combined at the Project location. Air emissions from both existing facilities have been calculated and are included as part of the baseline to determine total post-Project impacts. Appendix B contains baseline data and assumptions used in this analysis:

- Table B2 provides 2013 and 2014 baseline data for green and food material quantities historically processed at Santa Paula and Oxnard as well as associated inbound and outbound vehicle loads.
- Table B3 summarizes the baseline traffic assumptions for the combined Santa Paula and Oxnard operations as well as traffic going to the Toland Road landfill (see discussion below).
- Table B7 provides the assumptions and calculations used to estimate baseline trip distances for haul trucks and other vehicles.

3.3.2 Existing Waste to Landfills

Emissions associated with existing food and green material currently being sent to a landfill is included in the estimation of the baseline since this material is currently being generated and the Project will divert this material from the landfills to the Project site for processing.

The estimated green and food material available for diversion to the Project was estimated using CalRecycle's 2014 Waste Characterization Report and the 2014 Disposal Rate Statistics found on the CalRecycle website (http://www.calrecycle.ca.gov/LGCentral/Reports/jurisdiction/diversiondisposal.aspx).

Table B8 in Appendix B summarizes the calculation of "new tons" of green and food material available for the Project from Ventura's West County area, the area assumed to be serviced by the Project. The results showed:

Available compostable material (food & green) going to landfill:	212,984 tons/year
Food & green material currently accepted by Agromin:	113,862 tons/year
Total tons available for the Project:	326,846 tons/year

The Project is currently designed to handle 295,000 tons/year.

The estimate of green and food material currently going to a landfill was used in a number of calculations including baseline truck trips and distances (Tables B3 and B7) and baseline emission estimates (Appendix C). The calculation of baseline trip distances included a number of assumptions associated with current material travel to the existing operations at Oxnard and Santa Paula and to the Toland Road landfill:

- Green and food material currently going to the Toland Road landfill is first delivered by trash trucks to the Gold Coast Material Recovery Facility (MRF) located on Colt Street in Ventura, where it is separated from other refuse. It is then transported to the landfill in transfer trailers. Accordingly, there are two segments to the baseline trip distances for the material currently going to the landfill.
- Green and food material currently going to the existing operations at Oxnard and Santa Paula are primarily direct trips from the source of generation. Although roughly 40% of the baseline incoming material is delivered by transfer trailers from the MRF, this only accounts for 15% of the loads. This is due to the difference in weight capacity of the vehicles (16 tons/load for transfer trailer, 6.7 tons/load for trash trucks).
- The source of generation for incoming trips was assumed to be the same as CalRecycle's waste generation profile by area:

Location	Waste Generation 2014 (ton/year)	% of Total Trips
Camarillo	45,359	8.6%
Carpinteria	9,240	1.8%
Ojai	7,070	1.3%
Oxnard	249,317	47.4%
Port Hueneme	15,324	2.9%
San Buenaventura	116,973	22.2%
Santa Paula	20,442	3.9%
Unincorporated	62,162	11.8%
Totals:	525,886	100%

- The trip distance for incoming trips was assumed to be from a central point at each municipality to either the MRF or the existing operations at Oxnard or Santa Paula (see Table B7, Appendix B).

When calculating regional criteria pollutant impacts, baseline emissions were assumed to include emissions associated with the existing operations at Oxnard and Santa Paula and the compostable material currently being sent to the landfill. When calculating localized criteria and air toxic pollutant impacts, baseline emissions were assumed to include only emissions from the existing operations at Santa Paula.

4.0 SIGNIFICANCE THRESHOLDS

The VCAPCD's *Ventura County Air Quality Assessment Guidelines* (CEQA Guidelines) form the basis of this AQCCIA. Significance thresholds from the Guidelines are presented below. Note that significance thresholds are meant to be applied to the incremental impacts associated with the Project only.

Table 5 presents the criteria pollutant significance thresholds. The VCAPCD has only included thresholds for the ozone precursors oxides of nitrogen (NO_x) and reactive organic compounds (ROC). Note that, according to the CEQA Guidelines, these thresholds are only applied to unpermitted sources of emissions. Emissions from equipment requiring VCAPCD permits, specifically stationary equipment, are not counted towards these air quality significance thresholds. However, emissions from stationary sources are still quantified within this AQCCIA for informational purposes.

Table 5 Criteria Pollutant Significance Thresholds

Source	ROC (lbs/day)	NO_x (lbs/day)
Sources Not Requiring Permit	25	25

The CEQA Guidelines have not yet been updated to include a threshold for GHGs. As directed by the VCAPCD, this AQCCIA utilizes the South Coast Air Quality Management District's (SCAQMD) threshold for GHG impacts from industrial projects, as presented in Table 6.

Table 6 GHG Significance Thresholds

Source	CO_2e (MT/yr)
All Project Sources	10,000

Impacts from TAC emissions are estimated by conducting a health risk assessment (HRA). Table 7 presents the significance thresholds for health risk impacts, which are from the CEQA Guidelines.

Table 7 Health Risk Significance Thresholds

Source	Cancer Risk	Chronic Risk	Acute Risk
All Project Sources	10 cases in a million	1.0 hazard index	1.0 hazard index

In addition to the criteria pollutant, GHG, and TAC quantitative thresholds presented above, the CEQA Guidelines also requires that consistency with the Ventura County AQMP, fugitive dust impacts, odor impacts, and localized carbon monoxide impacts be addressed. Quantitative thresholds do not exist for these impacts. Rather, the following qualitative thresholds are employed:

- A project is **consistent with the AQMP** if it does not cause population growth beyond the population forecasts in the most recent AQMP.
- **Fugitive dust and odor impacts** are considered insignificant if they are not expected to "*...cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which may endanger the comfort, repose, health, or safety of any such person or the public, or which may cause, or have a natural tendency to cause, injury or damage to business or property*."
- **Localized carbon monoxide** impacts are considered less than significant if a project does not significantly impact roadway intersections that are currently operating at, or are expected to operate at, Levels of Service (LOS) E or F. If a project does significantly impact such roadway intersections, a more detailed assessment of localized carbon monoxide impacts should be conducted to determine the significance of CO emissions.

With regard to emissions from Project construction activities, the CEQA Guidelines indicate that:

> *"Construction-related emissions … of ROC and NOx are not counted towards the two significance thresholds, since these emissions are temporary. However, construction-related emissions should be mitigated if estimates of ROC and NOx emissions from the heavy-duty construction equipment anticipated to be used for a particular project exceed … the 25 pounds per day threshold..."*

5.0 CONSTRUCTION EMISSIONS & IMPACTS

Criteria pollutant impacts associated with Project construction are presented and compared to the mitigation thresholds from the CEQA Guidelines. Construction impacts are temporary impacts and typically include some or all of the following; fugitive dust from grading, demolition, and dirt hauling, emissions of criteria pollutants and GHG's from heavy equipment/haul trucks, employee and vendor vehicle emissions, and ROC emissions from paints/architectural coatings. Construction emissions can vary substantially from day to day, depending on the construction activities and weather conditions.

Construction phase emissions were calculated using the South Coast Air Quality Management District's (SCAQMD) *California Emissions Estimator Model* (CalEEMod) Version 2016.3.1, using the construction phase and equipment information described presented in Section 2.2. See Appendix E for the CalEEMod model results.

As described in Section 2.2, construction is expected to begin in 2019. The construction schedule presented in Table 8 below represents the construction schedule assessed within CalEEMod, which was estimated by Agromin. Also see Appendix E for more detail.

Table 8 Estimated Construction Schedule

Construction Phase	Phase Start	Phase End	Duration (days)
Demolition	1/1/2019	1/15/2019	14
Site Preparation	1/16/2019	2/6/2019	21
Grading	2/7/2019	3/7/2019	28
Building	3/8/2019	6/6/2019	90
Architectural Coating	6/7/2019	8/6/2019	60
Paving & Landscaping	8/7/2019	8/28/2019	21

In addition to the construction schedule in Table 8, Agromin has provided the following information that was used in the CalEEMod construction phase emissions calculations:

- The total size of the Project property and the nature of construction (replacement of existing structures, demolition activities, etc.);
- The portions of the Project property that require clearing and/or grading;
- The total material handling required (i.e., cut and/or fill);
- The amount of material that needs to be transported to and/or from the Project site; and
- The total size of the proposed structures, hardscaped areas, and landscaped areas.

The type, number, and hours of usage for the on/off-road equipment for each construction phase has been estimated based on the CalEEMod default values for the appropriate project size and adjusted to accurately reflect the Project scope. Agromin has reviewed these assumptions to ensure their consistency with the planned construction activities. Using the information and assumptions presented in Section 2.2, Table 9 presents the Project construction emissions calculated in CalEEMod. Please see Appendix E for the full CalEEMod output file. Note that mitigation is required for ozone precursors, please see Section 7.0.

Table 9 Project Construction Impacts (lbs/day)

Parameter	ROC	CO	NO_x	PM_{10}	$PM_{2.5}$
Construction Impacts	48.5	23.5	39.3	16.4	8.3
Mitigation Threshold	25	---	25	---	---
Mitigation Required	**Yes**	---	**Yes**	---	---

5.1 Construction Greenhouse Gas Emissions

Construction phase GHG emissions were calculated for the same sources and using CalEEMod model. Rather than the pound per day basis that is used for criteria pollutants, a metric ton per year basis is used for GHG's.

Table 10 presents the Project's construction CO_2e emissions impacts and compares it to the significance threshold. The peak year is the 1-year timeframe (i.e. 2019) with the most GHG emissions, which also represents the total overall emissions that will occur throughout Project construction, is utilized to determine significance. Please note that the GHG emission impacts are below the industrial threshold presented in Table 6.

Table 10 Project Construction GHG Emissions

Parameter	CO_2e Emissions – Peak Year & Overall (MT/year)
Project Construction Phase	333.0
Significance Threshold (Industrial)	10,000
Significant?	No

6.0 EMISSION CALCULATIONS AND PROJECT OPERATION IMPACTS

This section discusses results of the baseline and Project emission calculations and the impacts associated with the Project. Criteria pollutant, GHG, and TAC emissions from the Project operation were calculated based on the following methodologies and assumptions (see Appendices B, C, D and E for assumptions and calculations):

- **Stationary Source Emissions:** An inventory of stationary sources was developed based on consultations with Agromin and review of the equipment and processes currently utilized at Agromin's existing facilities (i.e. Santa Paula and Oxnard) as well as those proposed for the Project. Criteria pollutant, GHG (i.e., methane) and toxic air contaminant emissions from the processing equipment (grinders, screens, conveyors, etc.) and composting systems (windrows, CASP's, AD's) are based on applicable VCAPCD, SCAQMD and CARB emissions factors. See the calculations in Appendix C for emissions factors used and assumptions utilized to calculate stationary source emissions.

- **Off-Road Equipment Emissions**: An inventory of off-road mobile equipment was developed based on consultation with Agromin and a review of the equipment currently operating at Agromin's existing Santa Paula and Oxnard facilities. As described in Section 2.1, Agromin is proposing to utilize a combination of loaders, forklifts, screens, windrow pile turners, grinders, a water truck and a dump truck to facilitate processing of compostable materials and maintain facility operations. Criteria pollutant and GHG emissions from off-road equipment are calculated based on emissions factors from CARB's OFFROAD2014 model, including deterioration due to equipment age. It should be noted that Agromin will purchase a new fleet of loaders (i.e. engine year 2019) following completion of facility construction activities. The TAC associated with diesel combustion from off-road equipment is Diesel Particulate Matter (DPM), which is equivalent to exhaust PM_{10} emissions. DPM is speciated into its individual components for acute risk analysis based on CARB's speciation profiles.

- **Haul Truck Trips & Emissions**: Criteria and GHG emissions from haul trucks, collection and delivery vehicles are calculated using emissions factors from CARB's EMFAC2014 model. DPM emissions are equivalent to the exhaust PM_{10} emissions. DPM is speciated into its individual components for acute risk analysis based on CARB's speciation profiles.

  Haul truck emissions were calculated for existing operations (Agromin's Santa Paula/Oxnard facilities and material currently going to landfill) and for the proposed Project. Existing haul truck emissions are considered part of the baseline within this AQCCIA and therefore subtracted from the total post-Project haul truck emissions.

  Please see Appendix B which shows the anticipated haul truck activity generated by the Project. Haul truck emissions were calculated regionally for vehicles traveling offsite on County roadways and locally while vehicles travel onsite to unload and transport materials.

- **Employee Trips & Emissions**: Due to the increase Facility operations, processing capacity, and employees working onsite, the proposed Project will increase the total VMT by light-duty trucks and employee vehicles. Criteria pollutant and GHG emissions from employee trips are calculated using emissions factors from the CARB's EMFAC2014 model. Because the majority of employee trips are gasoline, and gasoline does not cause substantial health risk impacts when compared to diesel, employee trips are not included in the health risk assessment.

6.1 Criteria Pollutant and GHG Emission Impacts

Table 11 summarizes the baseline, Project and total Project increment criteria pollutant and GHG emissions (see Appendix C for calculations).

Table 11 Criteria Pollutant and GHG Emissions

BASELINE:	Peak Day Emissions (lb/day)						Peak Year Emissions (ton/year)						
Source	ROC	NOx	CO	PM10	PM2.5	NH3	ROC	NOx	CO	PM10	PM2.5	NH3	CO2e (MT)
Stationary													
Material Handling Fugitive Dust				4.22	1.74					0.59	0.25		
Windrow/CASP/AD Volatiles	1473.4					395	244.5					65.6	
Avoided Landfill GHG*													58,891
Avoided Landfill Flare Emissions	26.2	157.0	523.4	52.3	52.3		4.8	28.7	95.5	9.6	9.6		
Stationary Total	1,499.6	157.0	523.4	56.6	54.1	395.1	249.2	28.7	95.5	10.1	9.8	65.6	58,891
Mobile													
Off Road Engine Exhaust **	8.2	118.9	189.6	4.7	4.3		1.29	18.55	29.58	0.74	0.68		2,547
Motor Vehicle Fugitive PM				23.22	2.32					3.96	0.40		
Motor Vehicle Exhaust	3.45	110.36	36.43	0.71	0.68		0.538	17.2	5.7	0.11	0.11		3217
Mobile Total	11.7	229.3	226.1	28.7	7.3	0.0	1.8	35.8	35.3	4.8	1.2	0.0	5,764
*Alternative avoided landfill GHG emissions using CARB CERFs:			88,676	MT CO2e/year									
** Does not account for emissions from landfill handling of diverted compostables													

PROJECT:	Peak Day Emissions (lb/day)						Peak Year Emissions (ton/year)						
Source	ROC	NOx	CO	PM10	PM2.5	NH3	ROC	NOx	CO	PM10	PM2.5	NH3	CO2e (MT)
Stationary													
Material Handling Fugitive Dust				8.79	3.07					1.36	0.51		
Windrow/CASP/AD Volatiles	1,602					391	265.75					64.935	
AD CHP Engine Exhaust	7.4	38.9	58.3	0.7	0.6		1.35	7.09	10.64	0.12	0.11		8.06
AD Flare Emissions	0.2	0.2	1.3	0.018	0.016		0.03	0.04	0.24	0.003	0.003		0.24
Stationary Total	1,609.3	39.1	59.6	9.5	3.7	391.4	267.1	7.1	10.9	1.5	0.6	64.9	8
Mobile													
Off Road Engine Exhaust	4.4	26.3	126.0	1.1	1.0		0.81	4.81	22.99	0.20	0.19		2,172
Motor Vehicle Fugitive PM				3.02	0.30					0.39	0.04		
Motor Vehicle Exhaust	2.17	68.49	40.25	0.30	0.28		0.28	8.90	5.23	0.04	0.04		2,835
Mobile Total	6.6	94.8	166.2	4.4	1.6	0.0	1.1	13.7	28.2	0.6	0.3	0.0	5,007

PROJECT INCREMENT:	Peak Day Emissions (lb/day)						Peak Year Emissions (ton/year)						
Source	ROC	NOx	CO	PM10	PM2.5	NH3	ROC	NOx	CO	PM10	PM2.5	NH3	CO2e (MT)
Stationary													
Material Handling Fugitive Dust				4.58	1.33					0.77	0.26		
Windrow/CASP/AD Volatiles	128.34					-3.71	21.29					-0.62	
Avoided Landfill GHG													-58,891
Avoided Landfill Flare Emissions	-26.2	-157.0	-523.4	-52.3	-52.3		-4.8	-28.7	-95.5	-9.6	-9.6		
AD CHP Engine Exhaust	7.38	38.85	58.28	0.66	0.61		1.35	7.09	10.64	0.12	0.11		8.06
AD Flare Emissions	0.18	0.24	1.30	0.02	0.02		0.03	0.04	0.24	0.00	0.00		0.24
Stationary Total	109.7	-117.9	-463.8	-47.1	-50.4	-3.7	17.9	-21.5	-84.6	-8.7	-9.2	-0.6	-58,883.1
Mobile													
Off Road Engine Exhaust	-3.8	-92.6	-63.7	-3.6	-3.3		-0.48	-13.74	-6.59	-0.53	-0.49		-375
Motor Vehicle Fugitive PM				-20.20	-2.02					-3.56	-0.36		
Motor Vehicle Exhaust	-1.28	-41.87	3.82	-0.42	-0.40		-0.26	-8.31	-0.45	-0.07	-0.07		382
Mobile Total	-5.1	-134.4	-59.8	-24.2	-5.7	0.0	-0.7	-22.1	-7.0	-4.2	-0.9	0.0	-757

Table 12 compares the Project increment ROC and NO_x emissions from mobile (i.e., unpermitted) sources to the applicable significance thresholds (see Appendix C for calculations). Note that both impacts are less than the applicable significance threshold.

Table 12 Incremental Project Mobile Emissions (lb/day)

Parameter	ROC	NOx
Project Increment Emissions	-5.1	-134.4
Significance Threshold	25	25
Significant?	No	No

Table 13 presents the total Project increment GHG emissions compared to the applicable significance threshold. Note that Project GHG emissions are less than significant (see Appendix C for calculations).

Table 13 Project GHG Emissions Increase (MT/yr)

Parameter	CO2e
Project Increment GHG Emissions (reduction primarily due to avoided GHG Emissions from diversion of organics from landfill)	-59,648
Significance Threshold	10,000
Significant?	**No**

6.2 Toxic Air Emissions and Health Risk Assessment

TACs are pollutants that cause a health risk impact to exposed populations. TAC emissions from Project sources are calculated in Appendix D.

Air dispersion modeling is conducted to determine offsite concentrations of TAC emissions. For this Project, dispersion modeling was conducted using the Lakes AERMOD View (Version 9.4.0) implementation of the industry standard AERMOD dispersion model. Source and receptor locations are illustrated on Figures 4 and 5(Appendix A). The VCAPCD's Oxnard meteorological data was chosen due to proximity to the Project. The model was run for the entire duration of the Oxnard meteorological data (from January 1, 2009 to January 2, 2014) and the year that produced the highest risk was automatically utilized to calculate cancer and chronic risks. Modeling parameters are based on guidance from the Santa Barbara County Air Pollution Control District (SBCAPCD) *Modeling Guidelines for Health Risk Assessments* (November 2016) and are summarized in Appendix D. Air dispersion modeling files are included on a CD provided with this AQCCIA.

After determining offsite TAC concentrations, health risk impacts are calculated using California Air Resources Board's (CARB) Hotspots Analysis and Reporting Program 2 (HARP 2, dated 17052). None of the pollutants emitted by had multipathway risk factors, so the multipathway risk assessment was not necessary. Residential cancer risk was calculated based on 30-year exposure and the "Risk Management Policy using the Derived Method" intake rate percentile; worker risk was calculated based on 25 year exposure and the "OEHHA Derrived Method" intake rate percentile; and chronic risk was also calculated using the "OEHHA Derrived Method" intake rate percentile. Additional information regarding the dispersion modeling parameters used is provided in Appendix D. Health risk modeling files are included on a CD provided with this AQCCIA.

Project cancer risk impacts are presented in Table 14. Note that the Project cancer risk impact is less than the significance threshold at all receptors. Receptors located near the Project actually experience a reduction in health risk associated with the Project, primarily due to the use of cleaner offroad equipment and the electrification of some equipment. Cancer risk impacts are less than the significance threshold at all locations, so no cancer risk contour figure is necessary.

Table 14 Project Cancer Risk (Cases in a Million)

Parameter	Residential Receptors											Workplace Receptors				
	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	W1	W2	W3	W4	W5
Cancer Risk	-22	-17	-0.6	-0.6	0.0	0.5	-4.7	1.9	2.1	0.4	0.2	-0.8	0.1	0.0	0.0	0.0
Sig. Threshold	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Significant?	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No

Project chronic risk impacts are presented in Table 15. Note that the Project chronic risk impact is less than significance threshold at all receptors. Chronic risk impacts are less than the significance threshold at all locations, so no cancer risk contour figure is necessary.

Table 15 Project Chronic Risk (Hazard Index)

Parameter	Residential Receptors											Workplace Receptors				
	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	W1	W2	W3	W4	W5
Chronic Risk	0.18	0.20	0.13	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00
Sig. Threshold	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Significant?	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No

Project acute risk impacts are presented in Table 16. Note that the Project acute risk impact is less than significance threshold at all receptors and at the offsite point of maximum impact (PMI), which is located at the northeastern corner of the Project (see Figure 4). Acute risk impacts are less than the significance threshold at all locations, so no cancer risk contour figure is necessary.

Table 16 Project Acute Risk (Hazard Index)

Parameter	Residential Receptors											Workplace Receptors					PMI
	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	W1	W2	W3	W4	W5	
Acute Risk	0.42	0.49	0.35	0.14	0.11	0.09	0.16	0.07	0.06	0.05	0.05	0.36	0.10	0.10	0.14	0.06	0.61
Sig. Threshold	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Significant?	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No

6.3 Consistency with the Ventura County Air Quality Management Plan

In order to demonstrate consistency with the AQMP, a Project must demonstrate consistency with the population forecasts contained therein. Due to its industrial/commercial nature, this Project is not expected to cause an increase in population. Since this Project is not growth inducing, it is consistent with the AQMP population forecasts. Furthermore, the Project will remain consistent with the control strategies outlined in the AQMP by complying with stationary source regulations and BACT requirements as well as by complying with CARB's on-road heavy-duty diesel vehicle regulation.

6.4 Fugitive Dust Impacts

The CEQA Guidelines recommend that, rather than quantifying fugitive dust emissions, mitigation measures should be utilized to control emissions from dust generating operations and activities. Table 11 presents the baseline and Project estimated fugitive dust emissions (PM_{10}, $PM_{2.5}$), and also displays the total Project increment. As shown in the Table 11, it is estimated the Project will result in a net decrease of fugitive dust emissions due to consolidation of equipment and process from Agromin's existing facilities in Oxnard and Santa Paula at the new Facility. For these reasons, Project fugitive dust impacts are considered less than significant. Please see Appendix C for more details regarding fugitive dust emissions calculations.

Although a net decrease in fugitive dust emissions is estimated for the Project, there remains a potential for fugitive dust generation resulting from mobile (e.g. loaders) and stationary (e.g. screens, grinders) equipment operation, material moving, and vehicles on unpaved roads. To address fugitive dust concerns, a *Dust Control Plan* has been prepared for the facility. This plan provides a toolbox for Agromin field personnel to properly recognize dust sources and aid in the proper implementation of dust suppression best management practices (BMP's) at the new Facility. This plan also complies with CalRecycle's minimum dust control operating standards for compost facilities. Dust control BMP's that will be implemented at the Facility include the following:

- For heavily traveled and disturbed areas, wet suppression (watering), chemical dust suppression, gravel and/or asphalt surfacing, temporary gravel entrances, equipment wash-out areas, and haul truck/equipment covers can be employed as dust control applications. Water used for dust suppression should be applied by means of pressure-type distributors or pipelines equipped with a spray system or hoses and nozzles that will ensure even distribution.
- At least one (1) mobile unit (water truck) should be available at all times to apply water to the exposed roadways and working surfaces as needed.
- Permanent or temporary vegetation and mulching can be employed for areas of occasional and/or no construction traffic.
- Preventive measures would include minimizing surface areas to be disturbed, limiting on-site vehicle traffic to 5 mph, and controlling the number and activity of vehicles on site at any given time.
- Remove dust deposited by vehicles and equipment on paved surfaces as soon as possible, through the use of vacuum trucks, street sweepers, and brooms. Provide rapid clean-up of sediments deposited on paved roads.

Additional preventative operational measures include but are not limited to the following:

- Preventative measures can also be employed on pieces of equipment (such as chippers, grinders, screens, etc.) capable of producing airborne particulates, which would include covered conveyor belts, use of integrated misting systems, and maximizing the physical separation of dust generating activities from sensitive receptors.
- Schedule dust generating activities during periods of light winds and minimize exposed materials and process areas. Wind conditions should be monitored daily by onsite personnel.
- Quickly stabilize exposed soils using vegetation, mulching, and stone/gravel layering as appropriate and feasible.
- Direct feedstock delivery traffic to stabilized roadways within the facility. Signs should be installed onsite to direct vendor and customer vehicles while onsite.
- All distribution equipment shall be equipped with a positive means of shutoff.
- Construct natural or artificial windbreaks or windscreens. These may be designed as enclosures for small dust sources (chippers, grinders, mixers, etc.). Major grinding and size reductions should be conducted within one of the Organic Waste Recovery Buildings.
- Furnish stabilized construction road entrances and vehicle wash-down areas to prevent track-out.

Please see the *Dust Control Plan* dated February 2017 for more detailed and complete information related to fugitive dust emissions sources and controls at the Facility.

6.5 Odor Impacts

VCAPCD has no quantitative odor significance thresholds, but rather considers nuisance odors significant if they "*...cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which may endanger the comfort, repose, health, or safety of any such person or the public, or which may cause, or have a natural tendency to cause, injury or damage to business or property*." However, the CEQA Guidelines recommend a close examination of "potential odor impacts on residential areas, schools, day care centers, playgrounds, retirement homes, convalescent homes, hospitals, and job sites." For projects that may generate odorous emissions, such as composting facilities, potential receptors surrounding the project site within 1-mile should be assessed. Per the CEQA Guidelines, a significant odor impact may occur if the odor source has:

- More than one (1) confirmed odor complaint per year with the District, averaged over a three-year period.
- Three (3) unconfirmed odor complaints per year with the District, averaged over a three-year period.

To date, neither of Agromin's existing facilities in Oxnard or Santa Paula has received an odor complaint. However, the Project includes the increased processing and storage capacity of food material and compost. As such, the Project has an increased potential to generate objectionable odors due to the decomposition of organic matter.

To assess and mitigate odor emissions generated at the Facility, Agromin has completed an *Odor Impact Minimization Plan* (OIMP) that will be implemented upon commencement of Facility operations. The OIMP provides Agromin personnel with the proper tools to monitor onsite conditions and resulting odor emissions, eliminate origins of odor from the facility, and implement corrective actions if odor impacts are observed or complaints received.

As described within the OIMP, the Project includes the following control measures and design considerations to mitigate the release of objectionable odors from the facility:

- Feedstock Receiving & Processing
    - Onsite personnel, specifically scale house operators, will be trained to properly screen incoming feedstocks and vehicles for unacceptable wastes. All loads will be checked prior to loading the material into the processing equipment or windrows. Unacceptable material that does not pose an immediate threat to public health and safety and the environment will be collected at the composting facility and segregated, handled, and disposed of by trained personnel in accordance with applicable law and regulation. Debris boxes shall be maintained at all times for placement of unacceptable materials. These debris boxes shall be removed for legal offsite disposal at a permitted landfill and replaced within 7 days of initial placement.
    - The wet organics building (food material receiving) will be fully enclosed and subject to negative pressure with air ventilated through biofilters to control volatile organics (VOCs) and odor emissions.
    - Storage of unprocessed feedstocks will be limited to no more than 7 days for green material and 48-hours for food materials.
    - If feedstock material is observed to be generating verifiable, acute odor impacts, this material will be removed from the facility and transported to nearby landfills for disposal.
- Windrow Odor Mitigation:
    - To the greatest extent possible, all excess debris and contaminates shall be removed prior to

windrow formation.

- Windrows suspected of generating excessive odors shall be turned and/or covered with a layer of finished compost.
- Food Material will never be placed into windrows.
- Excess moisture observed between windrows shall be collected using the onsite vacuum truck and reapplied to the windrow piles. Ponded water in contact organic materials has the potential to generate excess odors.
- Windrow moisture content will be maintained between 45% and 60%.
- During the pathogen reduction phase, adequate stockpile temperatures of at least 55° C will be maintained.

- CASP Odor Mitigation:
  - It is anticipated that the CASP system will incorporate a "GORE™ Cover System", a multi-layer laminate cover that can achieve up to 97% reduction in odor concentrations.
- AD Odor Mitigation:
  - Digestate storage shall be consistently monitored to ensure proper storage and leaks/spills should be remedied immediately if observed.
  - Should feedstock and digestate storage create odor impacts with outdoor storage, all storage could be moved indoors and/or covered. Additionally, digestate composting could be moved to the CASP research operation, if needed, to eliminate odors from windrow composting of the same materials
- Agromin will provide nearby citizens with a means to report odor issue to facility operators so complaints can be quickly received, investigated, and remedied.

As described in the OIMP, odor mitigation procedures will be reviewed annually by Agromin, and revised as necessary. A copy of the OIMP will be kept at the Facility's Administrative Office and will be accessible to all employees during normal operating hours. The OIMP will be revised within 30 days to reflect significant changes to operations that affect the information and/or procedures found within this OIMP. If more than one (1) confirmed or three (3) unconfirmed complaints are received within a calendar year, Agromin will thoroughly reassess the OIMP and current control procedures to ensure nuisance odors impacts to nearby receptors are effectively mitigated. Please see the OIMP for more detail.

6.6 Carbon Monoxide Impacts

The Guidelines indicate that a screening analysis of localized carbon monoxide impacts should be conducted if a project may significantly impact roadway intersections that are operating at, or are expected to operate at, a level of service (LOS) of E or F. Based on the *Traffic Study* completed by Associated Traffic Engineers (ATE), this Project will not affect any intersections with a LOS of E or F (ATE, 2017). The intersections through which Project traffic will travel will continue to operate at LOS A and B. Therefore, the Project will have a less than significant impact on CO hotspots.

6.7 San Joaquin Valley Fever Impacts

Fugitive dust emissions can also lead to the spread of San Joaquin Valley Fever, a potential health hazard caused by a fungus that lives in the soil. The VCAPCD has not recommended threshold for a significant San Joaquin Velley Fever impact. However, the CEQA Guidelines present the following factors that may indicate a project's potential to create significant Valley Fever impacts:

- Disturbance of the top soil of undeveloped land (to a depth of about 12 inches)
- Dry, alkaline, sandy soils.
- Virgin, undisturbed, non-urban areas.
- Windy areas.
- Archaeological resources probable or known to exist in the area (Native American midden sites).
- Special events (fairs, concerts) and motorized activities (motocross track, All Terrain Vehicle activities) on un-vegetated soil (non-grass).
- Non-native population (i.e., out-of-area construction workers).

Based on the above factors, the Project has the greatest potential to generate Valley Fever impacts during construction, specifically during the site preparation and grading phases when disturbance of top soil will occur. The CEQA Guidelines recommend Valley Fever mitigation measures focus on fugitive dust control to minimize fungal spore entrainment, as well as minimized worker exposure. Please see the construction phase mitigations in Section 7.1 for mitigation measures related to fugitive dust control.

7.0 MITIGATION MEASURES

7.1 Construction Phase Mitigations

As discussed in the CEQA Guidelines, ozone precursor emissions from mobile construction equipment are not counted against the significance thresholds (CEQA Guidelines, page 7-5). However, construction emissions should be mitigated if emissions exceed the thresholds presented in Table 5. Furthermore, fugitive dust emissions should also be minimized during construction to mitigate nuisance impacts to nearby receptors and prevent the spread of San Joaquin Valley Fever. Note that construction activities for this Project are expected to be relatively short in duration (approximately 80 days). The Project will implement the following measures to mitigate ozone precursors and fugitive dust emissions during construction:

AQ-1. Minimize equipment idling time.

AQ-2. Maintain equipment engines in good condition and in proper tune as per manufacturers' specifications.

AQ-3. All trucks shall be required to cover their loads as required by California Vehicle Code §23114.

AQ-4. All graded and excavated material, exposed soil areas, and active portions of the construction site, including unpaved on-site roadways, shall be treated to prevent fugitive dust. Treatment shall include, but not necessarily be limited to, periodic watering, application of environmentally-safe soil stabilization materials, and/or roll-compaction as appropriate. Watering shall be done as often as necessary and reclaimed water shall be used whenever possible.

AQ-5. Signs shall be posted onsite limiting traffic to 15 miles per hour or less.

AQ-6. During periods of high winds (i.e., wind speed sufficient to cause fugitive dust to impact adjacent properties), all clearing, grading, earth moving, and excavation operations shall be curtailed to the degree necessary to prevent fugitive dust created by on-site activities and operations from being a nuisance or hazard, either off-site or on-site. The site superintendent/supervisor shall use his/her discretion in conjunction with the APCD in determining when winds are excessive.

AQ-7. Adjacent streets and roads shall be swept at least once per day, preferably at the end of the day, if visible soil material is carried over to adjacent streets and roads.

7.2 Operation Phase Mitigations

All operation phase impacts are less than the applicable significance threshold without mitigation. Therefore, mitigation is not required.

However, note that the impacts presented herein are based on the Applicant's decision to purchase new offroad equipment and to electrify a portion of the equipment. The Applicant will be investing a significant amount of money into ensuring that the Project results in net benefits to the local air quality. While this would generally be presented as a mitigation measure, the Applicant has included it as part of the Project description in this case.

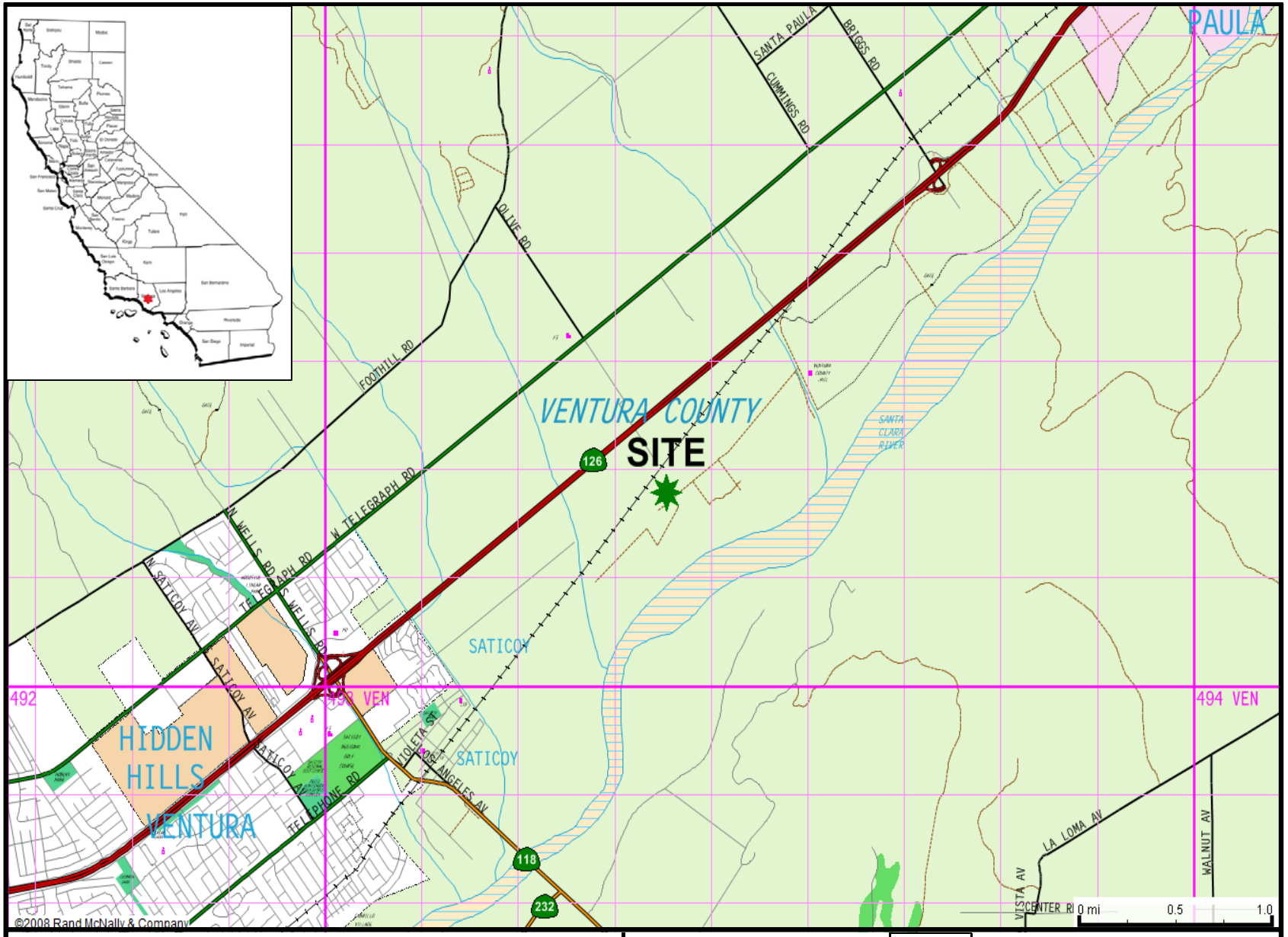
8.0 CONCLUSIONS

This AQCCIA has the following findings:

- The Project results in less than significant Construction phase emissions impacts with standard mitigation measures.
- The Project results in beneficial regional criteria pollutant impacts.
- The Project results in beneficial greenhouse gasses impacts.
- The Project results in less than significant localized health risk impacts.
- The Project is consistent with the Ventura County Air Quality Management Plan.
- The Project results in less than significant fugitive dust impacts.
- The Project results in less than significant odor impacts.
- The Project results in less than significant localized carbon monoxide impacts.

APPENDIX A

FIGURES



Source: 2008 Rand McNally & Company

N

SESPE CONSULTING, INC.

FIGURE 1	REGIONAL LOCATION MAP Agromin Commercial Organics Processing Operations Santa Paula, California 93060		
PROJECT #:	AG01.11.02	DATE:	1/7/17
SCALE:	as shown	DRAWN BY:	GPS

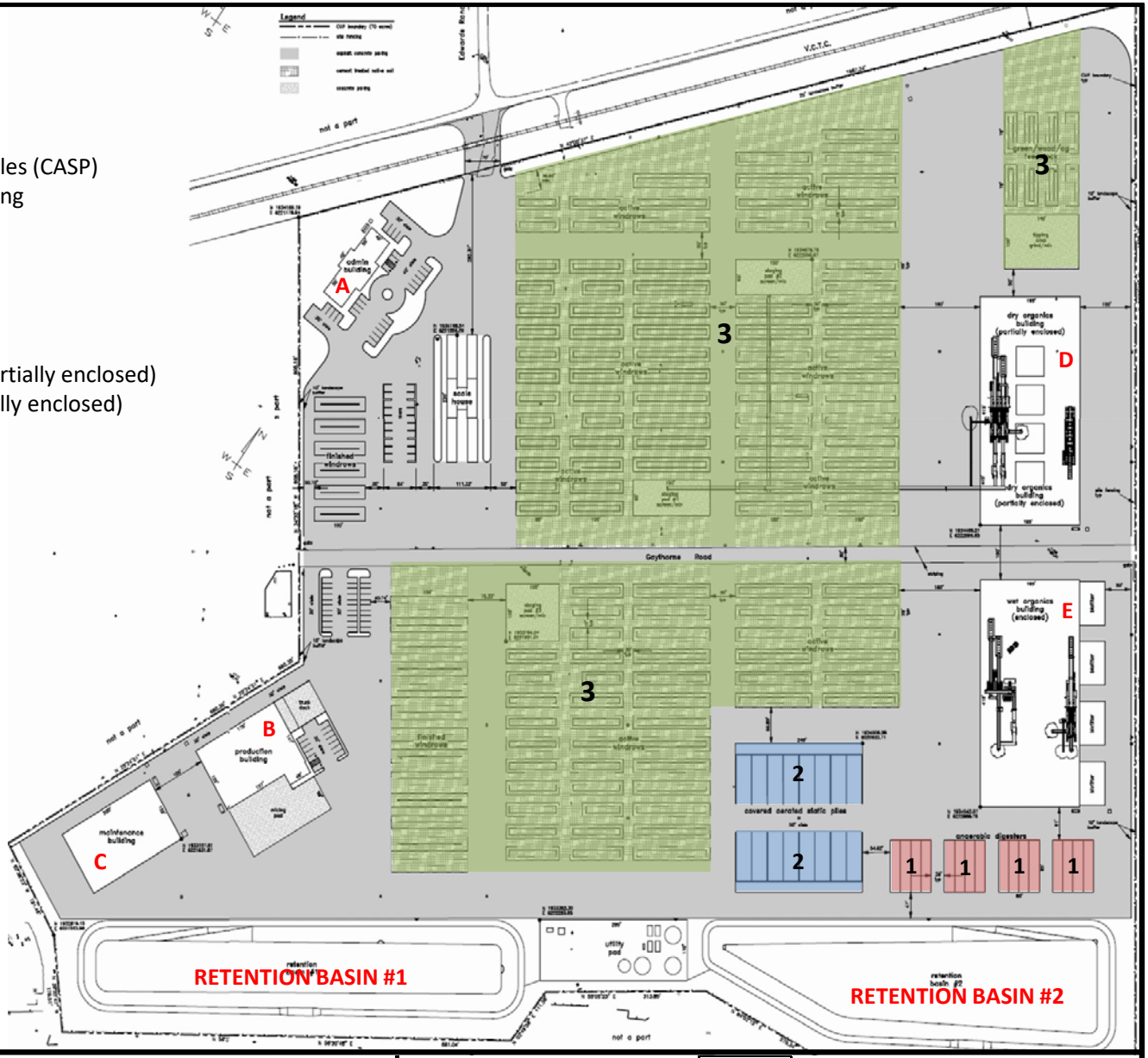
LEGEND

Noise Source Areas

1 - Anaerobic Digesters (AD)
2 - Covered Aerated Static Piles (CASP)
3 - Open Windrow Composting

Buildings

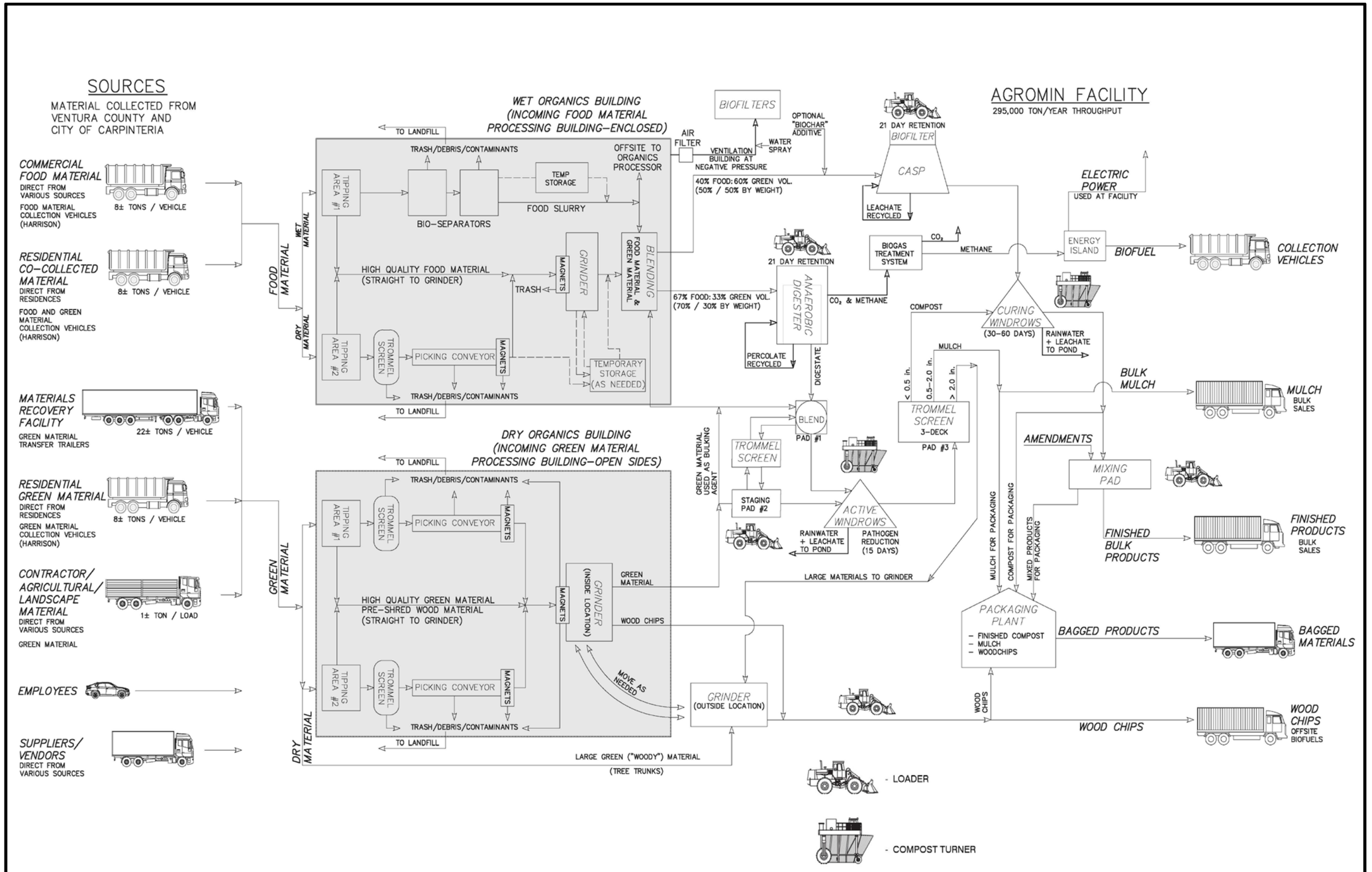
A - Administration Building
B - Production Building
C - Maintenance Building
D - Dry Organics Building (partially enclosed)
E - Wet Organics Building (fully enclosed)



Source: Agromin/E.J. Harrison

SESPE CONSULTING, INC.

FIGURE 2	FACILITY SITE PLAN Agromin Commercial Organics Processing Operation Santa Paula, California 93060		
PROJECT #:	AG01.11.02	DATE:	1/7/17
SCALE:	not to scale	DRAWN BY:	GPS



Source: Sespe Consulting, Inc.

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SESPE CONSULTING, INC.

FIGURE 3	FACILITY PROCESS FLOW Agromin Commercial Organics Processing Operation Santa Paula, California 93060		
PROJECT #:	AG01.11.02	DATE:	1/7/17
SCALE:	N/A	DRAWN BY:	GPS

Area Source Boundaries

Road Source

R# = Residential Receptor Area

W# = Workplace Receptor Area

PMI = point of maximum impact

N

SESPE CONSULTING, INC.

FIGURE 4

Onsite Sources and Nearby Receptors
Agromin Commercial Organics
Processing Operations
Santa Paula, California 93060

PROJECT #:	AG01.11.02	DATE:	5/18/17
SCALE:	as shown	DRAWN BY:	GLZ

Source: Google Earth 2017

R# = Residential Receptor Area

W# = Worker Receptor Area

Modeled Road Source

In order to ensure conservative health risk impact results, all Facility haul trips are assumed to utilize South Wells Road (see Section 3.2.2).

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SESPE CONSULTING, INC.

FIGURE 5	HAUL ROUTE SOURCE AND Agromin Commercial Organics Processing Operation Santa Paula, California 93060		
PROJECT #:	AG01.11.02	DATE:	5/18/17
SCALE:	N/A	DRAWN BY:	GLZ

APPENDIX B

BASELINE AND PROJECT OPERATIONAL DATA AND ASSUMPTIONS

Key to Abbreviations

AD	anaerobic digester
BH	business haul (landscapers)
CASP	covered aerobic static pile
CNG	compressed natural gas
CYY	cubic yards per year
FL	front loader
FW	food waste
GW	green waste
P	‘process’ or load/unload
SH	self haul
SL	side loader
TPY	tons per year
WW	wood waste
BT	Bobtail truck
TT	transfer trailer semi
RO	roll off truck

Table B1 - Truck Types

Category	Trip Type	Vehicle Type	Axles	EMFAC Vehicle Type
Incoming Waste	Commerical (FL)	Front Loader	3	40% HHD Diesel Solid Waste, 60% HHD CNG/LNG
	Residential (SL)	Side Loader	3	40% HHD Diesel Solid Waste, 60% HHD CNG/LNG
	MRF- Ventura	Transfer Trailer Semi	5	HHD Diesel Fleet
	MRF - Santa Barbara	Transfer Trailer Semi	5	HHD Diesel Fleet
	Business haul	Pickup or Flat Bed	2	50 LDT Gas, 50% diesel
	Self haul	Pickup or Flat Bed	2	50 LDT Gas, 50% diesel
	Roll-off	Roll Off	3	HHD Diesel Fleet
	Other	Transfer Trailer Semi	5	HHD Diesel Fleet
Incoming Deliveries	Organics	Transfer Trailer Semi	5	HHD Diesel Fleet
	Packing and fertilizer	Transfer Trailer Semi	5	HHD Diesel Fleet
	Sand and soil	Transfer Trailer Semi	5	HHD Diesel Fleet
	Miscellaneous	Transfer Trailer Semi	5	HHD Diesel Fleet
Outgoing Sales	Bobtail (BT)	Bobtail Truck	3	HHD Diesel Fleet
	Roll-off	Roll Off	3	HHD Diesel Fleet
	Transfer trailer	Transfer Trailer Semi	5	HHD Diesel Fleet
	Sales yard delivered	Dump Truck	3	HHD Diesel Fleet
	Sales yard self haul	Pickup or Flat Bed	2	50 LDT Gas, 50% diesel
Employees	Employee	Passenger Cars	2	Passenger Cars, Gas
	Visitor	Passenger Cars	2	Passenger Cars, Gas
	TBD			

TRANSFER TRAILER SEMI

ROLL OFF

BOBTAIL

DUMP TRUCK

SIDE LOADER

FRONT LOADER

Table B2 -Baseline Santa Paula & Oxnard Data (2013 & 2014)

2014 Totals

	tons
total green:	98,225
total food:	15,637
	113,862

Baseline 2014 Tons Incoming (by Vehicle type)

	Oxnard	SP	Total
Front Loader	0	0	0
Side Loader	20,057	24,057	44,114
[1]Transfer Trailer (Ventura)	18,442	25,792	44,234
[1]Transfer Trailer (SB)	4,610	0	4,610
Business haul	5,124	4,175	9,299
Self haul	5,075	824	5,899
Roll Off	1,935	3,771	5,706
	55,243	58,619	113,862

1 - assumes 80% of TT from Ventura, 20% from SB (MH assumption for project)

Baseline 2014 Tons Incoming by Waste Type

	Oxnard	SP	Total
Commercial Food (SL & TT)	10,876	0	10,876
Residential Green Material (SL)	17,465	24,057	41,522
Residential Co-Collected Green and Food Material			0
Materials Recovery Facility Green (TT)	10,007	25,792	35,799
Materials Recovery Facility Food (TT)	4,761		4,761
Green Contractor/Ag/ Landscape/ Self Haul (BH, SH, RO)	12,134	8,770	20,904
	55,243	58,619	113,862

Baseline 2014 Loads Incoming

	Oxnard	SP	Total
Front Loader	0	0	0
Side Loader	3,080	3,496	6,576
[1]Transfer Trailer (Ventura)	1,211	1,547	2,758
[1]Transfer Trailer (SB)	303	0	303
Business haul	1,000	1,410	2,410
Self haul	4,029	1,081	5,110
Roll Off	432	772	1,204
	10,055	8,306	18,361

1 - assumes 80% of TT from Ventura, 20% from SB (MH assumption for project)

Daily Inbound Loads

	Oxnard	SP	Total
Front Loader	0.0	0.0	0.0
Side Loader	9.9	11.2	21.1
1Transfer Trailer (Ventura)	3.9	5.0	8.8
1Transfer Trailer (SB)	1.0	0.0	1.0
Business haul	3.2	4.5	7.7
Self haul	12.9	3.5	16.4
Roll Off	1.4	2.5	3.9
	32	27	59

Baseline Assumptions

312	Incoming Waste Trip Days/Year
260	Outgoing Sales/Incoming Vendor/Visitor/ Trip Days/Year

Baseline 2013 Tons Outound

	Oxnard	SP	Total by Truck
Bobtail Truck (BT)	20	0	**20**
Roll Off (RO)	3765	309	**4074**
Transfer Trailer (TT)	20556	13343	**33899**
Customer Pickup (dump truck)	5995	983	6978
Customer Pickup (trailer - pickup truck)	299	785	1085
Total by Location:	**30636**	**15420**	
Total Tons:	**46056**		

Baseline 2013 Loads Outbound

	Oxnard	SP	Total by Truck
Bobtail Truck (BT)	1	0	**1**
Roll Off (RO)	402	47	**449**
Transfer Trailer (TT)	1065	1140	2205
Customer Pickup (dump truck)	2398	393	2791
Customer (trailer or pickup)	600	1572	2172
Total by Location:	**4466**	**3153**	
Total Loads:	**7618**		

Daily Outbound Loads

	Oxnard	SP	Total
Bobtail Truck (BT)	0.0	0.0	**0.0**
Roll Off (RO)	1.5	0.2	**1.7**
Transfer Trailer (TT)	4.1	4.4	**8.5**
Customer Pickup (dump truck)	9.2	1.5	**10.7**
Customer (trailer or pickup)	2.3	6.0	**8.4**
Total by Location:	**17**	**12**	
Total Loads:	**29**		

		For SP only
Total baseline (without vendor) loads Oxnard + Limoneira, inbound + outbound (annual):	25,979	11,459
Total baseline loads (without vendor) Oxnard + Limoneira, inbound + outbound (per day):	100	

Table B3 - Baseline Traffic Assumptions

Category	Trip Type	Vehicle Information		Shipped Material (Tons/Year)	Trucks Loads (roundtrips)			Vehicle Miles Traveled (VMT)		
		EMFAC Vehicle Type	Avg Capacity (Tons/Truck)		Loads per Year	Average Day Loads	Peak Day Loads	Avg Distance Per Roundtrip	VMT per Year	Peak Day VMT
Incoming Waste	Commerical (FL)	60% HHD Diesel Solid Waste, 40% HHD CNG/LNG	0.0	0	0	0	0	18.3	0	0
	Residential (SL)	60% HHD Diesel Solid Waste, 40% HHD CNG/LNG	6.7	44,114	6,576	22	25	18.3	120,481	458
	MRF- Ventura (TT)	HHD Diesel Fleet	16.0	44,234	2,758	9	10	24.5	67,540	245
	MRF-Santa Barbara (TT)	HHD Diesel Fleet	15.2	4,610	303	1	2	24.5	7,415	49
	Business haul	50 LDT Gas, 50% diesel	3.9	9,299	2,410	8	9	18.3	44,154	165
	Self haul	50 LDT Gas, 50% diesel	1.2	5,899	5,110	17	19	18.3	93,622	348
	Roll-off	HHD Diesel Fleet	4.7	5,706	1,204	4	5	18.3	22,059	92
			TOTAL:	**113,862**	**18,361**	**61**	**70**		**355,272**	**1,356**
Incoming Deliveries	Organics	HHD Diesel Fleet	15	10,350	85	1	2	50	4,266	100
	Packing and fertilizer	HHD Diesel Fleet			28	1	2		1,405	100
	Sand and soil	HHD Diesel Fleet			469	2	3		23,536	151
	Miscellaneous	HHD Diesel Fleet			108	1	2		5,420	100
			TOTAL:	**10,350**	**690**	**5**	**9**		**34,626**	**452**
Outgoing Sales	BT	HHD Diesel Fleet	19.7	20	1	0	0	30	30	0
	Roll-off	HHD Diesel Fleet	9.1	4,074	449	2	3	30	13,470	90
	Transfer trailer	HHD Diesel Fleet	15.4	33,899	2,205	8	9	30	66,150	270
	Sales yard delivered	HHD Diesel Fleet	2.5	6,978	2,791	11	13	30	83,736	390
	Sales yard self haul	50 LDT Gas, 50% diesel	0.5	1,085	2,172	8	9	30	65,160	270
			TOTAL:	**46,056**	**7,618**	**29**	**34**		**228,546**	**1,020**
Employees	Employee	Passenger Cars, Gas			10,608	34	38	20	212,160	760
	Visitor	Passenger Cars, Gas			2,600	10	11	20	52,000	220
	TBD	Passenger Cars, Gas			0	0	0	20	0	0
			TOTAL:		**13,208**	**44**	**49**		**264,160**	**980**
Existing to Landfill	To Ventura MRF (SL\FL)	HHD Diesel Fleet	6.4	181,138	28,147	108	119	18.8	529,533	2,239
	MRF to Toland (TT)	HHD Diesel Fleet	17.8		10,158	39	43	38	385,989	1,634
			TOTAL:		**38,304**	**147**	**162**		**915,522**	**3,873**
				BASELINE TOTAL:	78,182	286	324		1,798,126	7,681
				WITHOUT LANDFILL OR EMPLOYEES:	26,669	95	113			

Assumes:

18 of 46 vehicles per day from commercial/residential are CNG, hence 40%

Half of business haul and self haul vehicles are gasoline

Where do outbound vehicles go?

BASELINE INBOUND/OUTBOUND ROUNDTRIP DISTANCES:

Commercial/Residential:	18.3	
Other (Business, self, roll, other)	18.3	
Current material going through MRF first:	24.5	average ADT
SL/FL going to Gold Coast (new tons):	18.8	
TT from Gold Coast to Toland (new tons):	38	
Inbound Deliveries:	50	
Outbound Sales:	30	
Employee/Visitor:	20	

% of waste through MRF: 43%

Baseline Employees

11 at Santa Paula (per dave Green 8/31/16)
13 at Shoreline (13 - from 2016 Shoreline CUP application)
10 at Oxnard headquarters
34

10 baseline visitors per day (assume same as proposed project)

Average load per FL/SL (tons): 6.7
Average load per TT (tons): 16.0

Summary by Vehicle Type

Vehicle Information		Baseline Trucks Loads (roundtrips)			Baseline VMT	
Vehicle Type	Fuel Type	Peak Year Loads	Average Day Loads	Peak Day Loads	VMT per Year	Peak Day VMT
HHD Solid Waste Collection Truck	Diesel	20,834	78	86	390,009	1,618
HHD Solid Waste Collection Truck	CNG	13,889	52	58	260,006	1,079
HHD Fleet Truck	Diesel	20,559	79	94	681,015	3,221
Light Duty Truck	Gasoline	4,846	17	19	101,468	391
Light Duty Truck	Diesel	4,846	17	19	101,468	391
Passenger Cars	Gasoline	13,208	44	49	264,160	980
	Total Haul:	**64,974**	**242**	**275**	**1,533,966**	**6,701**
	Total Worker:	**13,208**	**44**	**49**	**264,160**	**980**
	Total Overall:	**78,182**	**286**	**324**	**1,798,126**	**7,681**

Baseline Assumptions

312 Incoming Waste Trip Days/Year
260 Outgoing Sales/Incoming Vendor/Visitor/ Trip Days/Year
10% Increase From Average to Peak Day (per M. Harrison 11/30/16 - add 10% for peak loading.)
10 Incoming waste deliveries hours per day (7AM - 5PM)
312 feedstock processing days/year
10 feedstock processing hours/day (7AM - 5PM Dave Green 9/26/16)
312 Windrow & outdoor material processing days/year (7AM - 5PM M-F, 7AM - 3PM Sat., Dave Green 9/26/16)
12 Windrow & outdoor material processing hours/day

Agromin-Project

Throughput Analysis

Build-Out Scenario 2

Table B4 - Project Throughput Calculations

	units	facility qty./description	AD [5.] qty./description	CASP [5.] qty./description	windrow qty./description	gasification qty./description
facility throughput [6.]	tpy	295,000	40,000	75,000	180,000	0
pre-processing method			mixing	mix/screen/grind	mix/screen/grind	mix/screen/grind
average throughput [4.]	tpd	1,135	154	288	692	0
average volume	cyd		327	656	1,731	0
peak throughput	tpd	1,362	185	346	831	
peak volume	cyd					
residual	%		10	8	10	
output	%		80	95		5
output product			digestate	digestate	compost	biochar
material processed	tpy		40,000	75,000	256,350	0
volume processed	cyy		76,596	156,818	640,875	0
retention time	days		21	21	90	
feedstock storage duration [2. 7.]	days		0	0	2	0
feedstock storage volume	cy		***0***	***0***	***3,462***	***0***
product storage duration [3.]	days		22	22	64	
product storage volume	cy				***133,271***	
annual production volume	cyy				416,569	
annual production	ton				134,968	
output storage duration [2.]	days					0
output storage volume	cyd					0
residual storage duration [2.]	days		5	5	5	
residual storage volume	cyd		33	52	173	
output/residual storage	cy		***164***	***262***	***865***	***0***

	AD	CASP	Windrow
Cubic yard/ton	1.91	2.09	2.50
Ton/cubic yard	0.52	0.48	0.40

Total in (ton/yr): 295,000

Total out (ton/yr): 134,968

% out/in: 46%

16.59 # of AD & CASP turnovers

	2014 Totals tons
total green:	98,225
total food:	15,637
	113,862

Expected storage:		for PD:
green feed:	3,462	
AD feed:	0	0
CASP feed:	0	0
in windrows:		
in AD:	4,617	5,000
in CASP:	9,452	10,000
finished product:		

units required	11	16	

waste delivery days/year: 260

1. not used
2. duration in business days
3. duration in calendar days
4. based on 260 business days per year
5. AD unit size(60F/40GWA by weight) - 95'x18'x8.5', CASP unit size (50F/50GWA by weight) - 90'x30'x8'
6. w. county 330k tpy organics - Limoneira 235,000 tpy green, wood, & ag, 60,000 tpy food - GCR 35,000 tpy food
7. storage not required based on unit cycle times

For use in - CARB Waste Diversion GHG Emission Reduction Calculator for FY 2015-16 (.xlsx)

181,138	New tons diverted from landfill
61%	New tons percent of total project feedstock
22%	% Food
40,000	New tons - Feedstock Diverted for AD Producing Electricity & Digestate is Composted (Short Tons)
0	New tons - Feedstock Diverted for AD Producing Vehicle Fuel & Digestate that is Composted (Short Tons)
66,138	New tons - Feedstock Diverted for Windrow Composting (Short Tons)
75,000	New tons - Feedstock Diverted for ASP System Composting (Short Tons)
181,138	sum check (new tons)

Agromin- Project

inbound material circulation

Table B5 - Project Process Flow

material (TPY)

customer type	county	vehicle type	pre-technology material				technology				post-technology material					total material			
			green	food	ag	wood	AD	CASP	windrow	chip/gas	green	food	wood	ag	other	green	food	ag	wood
commerical	Ventura	SL/FL	35,225	16,455	0	0	21,425	2,914	27,341	0	0	0	0	0	0	35,225	16,455	0	0
residential	Ventura	SL/FL	67,195	3,399	0	0	0	6,799	63,795	0	0	0	0	0	0	67,195	3,399	0	0
material recovery facility	Ventura	TT	50,103	36,517	50	2,142	14,860	52,230	21,722	0	0	1,733	0	0	0	50,103	38,250	50	2,142
material recovery facility	Santa Barbara	TT	12,526	9,129	12	536	3,715	13,058	5,430	0	0	0	0	0	0	12,526	9,129	12	536
business haul	Ventura	BH	11,055	0	4,596	6,161	0	0	21,813	0	0	0	0	0	0	11,055	0	4,596	6,161
self haul	Ventura	SH	12,665	0	0	20,119	0	0	32,784	0	0	0	0	0	0	12,665	0	0	20,119
roll-off	Ventura	RO	782	0	1,449	4,884	0	0	7,115	0	0	0	0	0	0	782	0	1,449	4,884
sub-total			189,551	65,500	6,108	33,841	40,000	75,000	180,000	0	0	1,733	0	0	0	189,551	67,233	6,108	33,841
total			295,000				295,000				1,733					296,733			

% of total from MRFs 38% 111,015 tons

trips per year

customer type	county	vehicle type	pre-technology material				technology				post-technology material					total material			
			green	food	ag	wood	AD	CASP	windrow	chip/gas	green	food	wood	ag	other	green	food	ag	wood
commerical	Ventura	SL/FL	5,514	3,309	0	0	4,461	372	3,990	0	0	0	0	0	0	5,514	3,309	0	0
residential	Ventura	SL/FL	9,743	434	0	0	0	868	9,309	0	0	0	0	0	0	9,743	434	0	0
material recovery facility	Ventura	TT	2,732	2,036	4	208	913	2,795	1,273	0	0	206	0	0	0	2,732	2,242	4	208
material recovery facility	Santa Barbara	TT	683	509	1	52	228	699	318	0	0	0	0	0	0	683	509	1	52
business haul	Ventura	BH	2,600	0	687	2,170	0	0	5,457	0	0	0	0	0	0	2,600	0	687	2,170
self haul	Ventura	SH	7,612	0	0	19,090	0	0	26,702	0	0	0	0	0	0	7,612	0	0	19,090
roll-off	Ventura	RO	82	0	209	1,149	0	0	1,439	0	0	0	0	0	0	82	0	209	1,149
sub-total			28,966	6,288	900	22,669	5,602	4,734	48,488	0	0	206	0		0	28,966	6,494	900	22,669
total			58,824				58,824				206					59,030			

% of total from MRFs 11%

inbound vehicles per day

customer type	county	vehicle type	pre-technology material				technology				post-technology material					total material			
			green	food	ag	wood	AD	CASP	windrow	chip/gas	green	food	wood	ag	other	green	food	ag	wood
commerical	Ventura	SL/FL	21	13	0	0	17	1	15	0	0	0	0	0	0	21	13	0	0
residential	Ventura	SL/FL	37	2	0	0	0	3	36	0	0	0	0	0	0	37	2	0	0
material recovery facility	Ventura	TT	11	8	0	1	4	11	5	0	0	1	0	0	0	11	9	0	1
material recovery facility	Santa Barbara	TT	3	2	0	0	1	3	1	0	0	0	0	0	0	3	2	0	0
business haul	Ventura	BH	10	0	3	8	0	0	21	0	0	0	0	0	0	10	0	3	8
self haul	Ventura	SH	29	0	0	73	0	0	103	0	0	0	0	0	0	29	0	0	73
roll-off	Ventura	RO	0	0	1	4	0	0	6	0	0	0	0	0	0	0	0	1	4
sub-total			111	24	3	87	22	18	186	0	0	1	0	0	0	111	25	3	87
Day/yr 260.00																			
total			226				226				1					227			

% of total from MRFs 11%

Annual Tons	green mat'l	food mat'l	
	TOTAL TONS		
51,680	35,225	16,455	
70,594	67,195	3,399	
88,812	52,295	36,517	
22,203	13,074	9,129	7.5% % from SB County
21,813	21,813	0	
32,784	32,784	0	22% % Food
7,115	7,115	0	
	229,500	65,500	15,637
			98,225
295,000	**2014 baseline**	**Project**	
	10,876	16,455	commercial food
	41,522	105,819	residential green & co-collected
Annual	35,799	65,368	Material Recovery Facility (green)
Loads	4,761	45,646	Material Recovery Facility (food)
8,823	20,904	61,712	Contractor/Ag/ Landscape / Self Haul
10,177	113,862	295,000	2.6 :ratio
4,980		181,138	diff
1,245	**Additional waste from 2014 CalRecycle**		
5,457	95,185		Food (industrial, commercial, residential sources)
26,702	117,799		Other compostable (green, wood, paper, lumber)
1,439	212,984		
	326,846		Theoretical total available waste (tons)
58,824	**For Project Desc:**		
	51,680	52,000	commercial food
	70,594	71,000	residential green & co-collected
	111,015	110,000	Material Recovery Facility
totals	61,712	62,000	Contractor/Ag/ Landscape / Self Haul
34	295,000	295,000	
39			
20			
5			
21			
103			
6			

Summary of daily trips by vehicle type:

	Loads	ADT	Time Period
incoming waste SL/FL (side loader/front loader)	73	146	7AM - 5PM M-F
incoming waste TT (transfer trailer)	25	49	7AM - 5PM M-F
incoming waste BH (business haul)	124	247	7AM - 5PM M-F
incoming waste RO (roll off)	6	11	7AM - 5PM M-F
Incoming supplies deliveries (TT)	8	16	7AM - 5PM M-F
Outgoing sales (RO)	5	10	7AM - 5PM M-F
Outgoing sales (TT)	25	50	7AM - 5PM M-F
Outgoing sales (dump truck)	31	63	7AM - 5PM M-F
Outgoing sales (customer self pickup/trailer)	24	49	7AM - 5PM M-F
Employees (office)	10	20	7AM - 5PM M-F
Employees (waste receiving & maintenance)	8	16	7AM - 5PM M-Sat
Employees (material processing bldg.)	10	20	6AM - 3PM M-Sun
Employees (material processing bldg.)	10	20	3PM - 10PM M-Sun
Employees (packaging)	5	10	6AM - 3PM M-Sat
Employees (packaging)	5	10	3PM - 10PM M-Sat
Employees (outdoor processing)	4	8	sunrise - sunset
Visitors	10	20	7AM - 5PM M-Sat
Total	383	766	

could be on Saturday

Shoreline trips from 5/23/14 meeting from Agromin

1149	total customer invoices out of City side yard at Shoreline
690	number that had a delivery charge
459	self pickup (pickup truck - 5 cubic yard average)
40%	% self pickup

NOTE: these trips did not go thru the scale house. It's also based on tickets so trips for multi-truck sales are not counted. 1 ticket could be multi trips.

	Loads	ADT
Incoming waste total	227	454
Outgoing sales total	86	172
Incoming deliveries total	8	16
Employee/visitor total	62	124
	383	766
Not counting employees:	321	642
Employees Only:	52	

Table B6 - Project Traffic Assumptions

Category	Trip Type	Vehicle Information		Shipped Material (Tons/Year)	Trucks Loads (roundtrips)			Vehicle Miles Traveled (VMT)		
		EMFAC Vehicle Type	Avg Capacity (Tons/Truck)		Loads per Year	Average Day Loads	Peak Day Loads	Avg Distance Per Roundtrip	VMT per Year	Peak Day VMT
Incoming Waste	Commerical (FL)	60% HHD Diesel Solid Waste, 40% HHD CNG/LNG	5.9	51,680	8,823	34	38	24.8	218,454	941
	Residential (SL)	60% HHD Diesel Solid Waste, 40% HHD CNG/LNG	6.9	70,594	10,177	40	44	24.8	251,983	1,089
	MRF- Ventura (TT)	HHD Diesel Fleet	17.8	88,812	4,980	20	22	23.9	119,034	526
	MRF-Santa Barbara (TT)	HHD Diesel Fleet	17.8	22,203	1,245	5	6	23.9	29,759	143
	Business haul	50 LDT Gas, 50% diesel	4.0	21,813	5,457	21	24	24.8	135,113	594
	Self haul	50 LDT Gas, 50% diesel	1.2	32,784	26,702	103	114	24.8	661,136	2,823
	Roll-off	HHD Diesel Fleet	4.9	7,115	1,439	6	7	24.8	35,641	173
			TOTAL:	**295,000**	**58,824**	**229**	**255**		**1,451,119**	**6,290**
Incoming Deliveries	Organics	HHD Diesel Fleet	15	26,815	220	1	2	46	10,222	93
	Packing and fertilizer	HHD Diesel Fleet			73	1	2		3,367	93
	Sand and soil	HHD Diesel Fleet			1215	5	6		56,402	279
	Miscellaneous	HHD Diesel Fleet			280	2	3		12,988	139
			TOTAL:	**26,815**	**1788**	**9**	**13**		**82,980**	**603**
Outgoing Sales	BT	HHD Diesel Fleet	19.7	58	3	0	0	24	70	0
	Roll-off	HHD Diesel Fleet	9.1	11,940	1,316	5	6	24	31,579	144
	Transfer trailer	HHD Diesel Fleet	15.4	99,342	6,462	25	28	24	155,084	672
	Sales yard delivered	HHD Diesel Fleet	2.5	20,449	8,180	31	35	24	196,313	840
	Sales yard self haul	50 LDT Gas, 50% diesel	0.5	3,179	6,365	24	27	24	152,763	648
			TOTAL:	**134,968**	**22,325**	**85**	**96**		**535,809**	**2,304**
Employees	Employee	Passenger Cars, Gas			13,520	52	58	20	270,400	1,160
	Visitor	Passenger Cars, Gas			2,600	10	11	20	52,000	220
	TBD	Passenger Cars, Gas			0	0	0	20	0	0
			TOTAL:		**16,120**	**62**	**69**		**322,400**	**1,380**
				BASELINE TOTAL:	99,057	385	433		2,392,308	10,577

Assumes:

18 of 46 vehicles per day from commercial/residential are CNG, hence 40%

Half of business haul and self haul vehicles are gasoline

PROJECT INBOUND/OUTBOUND ROUNDTRIP DISTANCES:

Commercial/Residential:	24.8
Other (Business, self, roll, other)	24.8
Material going through MRF first:	23.9
Inbound Deliveries:	46
Outbound Sales:	24
Employee/Visitor:	20
% of waste through MRF:	38%

Project Employees

52 at Santa Paula

0 at Shoreline (closed)

0 at Oxnard headquarters

52

10 Project visitors per day

Average load per FL/SL (tons): 6.4

Average load per TT (tons): 17.8

Baseline product (ton/year):	46,056
Project product (ton/year):	134,968
Project:Baseline outgoing product ratio:	2.93
Baseline incoming waste (ton/year):	113,862
Project incoming waste (ton/year):	295,000
Project:Baseline incoming waste ratio:	2.59

Summary by Vehicle Type

Vehicle Information		Project Trucks Loads (roundtrips)			Project VMT	
Vehicle Type	Fuel Type	Peak Year Loads	Average Day Loads	Peak Day Loads	VMT per Year	Peak Day VMT
HHD Solid Waste Collection Truck	Diesel	11,400	44	49	282,263	1,218
HHD Solid Waste Collection Truck	CNG	7,600	30	33	188,175	812
HHD Fleet Truck	Diesel	25,413	101	117	650,459	3,102
Light Duty Truck	Gasoline	19,262	74	83	474,506	2,032
Light Duty Truck	Diesel	19,262	74	83	474,506	2,032
Passenger Cars	Gasoline	16,120	62	69	322,400	1,380
	Total Haul:	**82,937**	**323**	**364**	**2,069,908**	**9,197**
	Total Worker:	**16,120**	**62**	**69**	**322,400**	**1,380**
	Total Overall:	**99,057**	**385**	**433**	**2,392,308**	**10,577**

Project Assumptions

260 Incoming Waste Trip Days/Year

260 Outgoing Sales/Incoming Vendor/Visitor/ Trip Days/Year (per M. Harrison 1/17/17)

10% Increase From Average to Peak Day (per M. Harrison 11/30/16 - add 10% for peak loading.)

10 Incoming waste deliveries hours per day (7AM - 5PM)

365 feedstock processing days/year

16 feedstock processing hours/day

365 Windrow & outdoor material processing days/year

12 Windrow & outdoor material processing hours/day

Table B7 - Trip Distance Assumptions

- Esssentially any waste that has come in or will come in via a Transfer Trailer (TT) is considered as coming from an MRF facility.
- For distance estimates, the MRF facility is considered to be Gold Coast

BASELINE TRIP DISTANCES: (based on how much trash is generated by city/area)

Estimating waste delivery trip distance from total West County waste generation split (based on CalRecycle Disposal Rate Statistics - New Tons)

Incoming Material To Santa Paula Facility	Total Waste ton/yr	% of total	One way distance (mi.)	% x miles	
San Buenaventura	116,973	63.3%	10	6.3	
1/4 of Unincorporated	31,081	16.8%	5	0.8	
Ojai	7,070	3.8%	28	1.1	
Carpinteria	9,240	5.0%	27	1.3	
Santa Paula	20,442	11.1%	6	0.7	
	184,806	1.0		10.3	
Incoming Material To Oxnard Facility					
1/4 of Unincorporated	31,081	9.1%	5	0.5	
Camarillo	45,359	13.3%	15	2.0	101 to Rice
Oxnard	249,317	73.1%	8	5.8	
Port Hueneme	15,324	4.5%	6	0.3	
	341,080	1.0		8.6	
	525,886				

Ave. Incoming Waste Material going directly to Agromin facilities (mi.):	**9.16**	One Way Trip
Ave. Incoming Waste Material going directly to Agromin facilities (mi.):	**18.3**	Round Trip
Average inbound vendor one way trip to Oxnard (mi.):	25	
Average outbound sales one way trip from Oxnard (mi):	15	1/2 way to County lines
Average employee & visitor trip one way (mi):	10	

Trash hauling: Essentially all EJH landfill bound trash from west Ventura County is taken straight to Gold Coast recycling first in a variety of trucks (SL, FL, etc.) for processing. No loads go direct to Toland. After separation it is sent to Toland landfill in 20 ton/load transfer trailers (TT). ±17 ton/truck - M. Harrison 9/1/16

Location	Total Waste ton/yr	% of total	One way distance to Gold Coast (mi.)	% x miles
Camarillo	45,359	8.6%	13	1.1
Carpinteria	9,240	1.8%	22	0.4
Ojai	7,070	1.3%	21	0.3
Oxnard	249,317	47.4%	7	3.3
Port Hueneme	15,324	2.9%	10	0.3
San Buenaventura	116,973	22.2%	6	1.3
Santa Paula	20,442	3.9%	14	0.5
1/2 of Unincorporated	62,162	11.8%	18	2.1
	525,886	1	one way	9.4
			one way	19.0

Ave. miles to Gold Coast

From Gold Coast to Toland

Trip distance for current lanfill bound waste that goes to Gold Coast first, then to Toland

2014 West County compostable tons to landfill (new tons)		181,138	Tot. Miles	
Loads to Gold Coast assuming	6.4	ton/truck (FL/SL):	28,147	264,767	Average
Loads to Toland assuming	17.8	ton/truck (FL/SL):	10,158	192,994	Trip Distance
		one way miles		457,761	12.0
		round trip (x2)		**915,522**	23.9

TOTAL MILES FOR COMPOSTABLE WASTE CURRENTLY GOING TO LANDFILL
ASSUMES ALL "NEW TONS" ARE CURRENTLY GOING THROUGH GOLD COAST

For Baseline:

Average load per FL/SL (tons):	6.7
Average load per TT (tons):	16.0

Current Material Going Through MRF:

	Tons	Loads	Project VMT
Waste to MRF First:	48,844	7,290	137,151
Waste from MRF to Santa Paula:	48,844	3,061	116,318
Totals:	10,351		253,469
Average round trip through MRF (miles)			**24.5**
Average one way trip through MRF (miles)			**12.2**

PROJECT TRIP DISTANCES: (based on how much trash is generated by city/area)

Estimating waste delivery trip distance from total West County waste generation split (based on CalRecycle Disposal Rate Statistics - New Tons)

Incoming Material To Santa Paula Facility	Total Waste ton/yr	% of total	One way distance (mi.)	% x miles	
Camarillo	45,359	8.6%	16	1.4	
Carpinteria	9,240	1.8%	27	0.5	
Ojai	7,070	1.3%	28	0.4	
Oxnard	249,317	47.4%	13	6.2	
Port Hueneme	15,324	2.9%	20	0.6	
San Buenaventura	116,973	22.2%	10	2.2	
Santa Paula	20,442	3.9%	6	0.2	TRIP DISTANCE FOR WASTE
1/2 of Unincorporated	62,162	11.8%	8	0.9	THAT GOES DIRECTLY TO SP
	525,886	1		**12.4**	ave one way waste delivery trip
				24.8	ave round trip miles

Average inbound vendor one way trip to SP (mi.):	23	
Average outbound sales one way trip from SP (mi):	12	roughly 1/2 way to County lines
Average employee & visitor trip one way (mi):	10	

VMT/ton check:	Total VMT	Total Tons Moved [1]	Total VMT/ton	Waste VMT	Waste in Tons Only [2]	Waste VMT/ton
Baseline:	1,798,126	351,406	5.12	1,270,794	295,000	4.31
Project:	2,392,308	456,784	5.24	1,451,119	295,000	4.92

1 - includes inbound waste, inbound deliveries, outgoing sales, employees & visitors
2 - Includes only inbound waste tons
Looks like miles saved by not going through Gold Coast are offset by the extra miles related to additional product deliveries

New Project VMT:

	Tons	Loads	Project VMT	
Straight to Santa Paula:	183,985	28,589	707,868	
Going Through MRF:				
Waste to MRF First:	111,015	17,250	324,537	
Waste from MRF to Santa Paula:	111,015	6,225	236,562	
Totals:		52,065	1,268,967	Total for project
Totals:		23,476	561,099	←Total VMT through the MRF (miles)
			23.9	←Average round trip through MRF (miles)
			12.0	←Average one way trip through MRF (miles)

Waste loads from Project sheet:	58,824
% of waste direct to Santa Paula	62%
% of waste through MRF (Gold Coast)	38%

RATIO CHECK (project:baseline):	2.59	baseline:project waste ratio
incoming waste VMT:	1.00	
incoming delivery VMT:	2.40	OK that < waste ratio, project ave trip is shorter
outgoing sales VMT:	2.34	OK- same as baseline:project waste ratio
employee/visitor VMT:	1.22	OK - not many new employees proposed
incoming waste tons:	2.59	

Main increase due to more incoming deliveries (fertillizer, etc.) and more outgoing sales, neither of which are "inelastic" since they did not exist for landfilled tons

PROJECT vs BASELINE VMT: (Using method to left - slightly different project miles than the method used on Project tab):

	Direct To OX + SP	Through Gold Coast	Total		
baseline incoming waste	355,272	915,522	1,270,794		
baseline incoming deliveries	34,626	0	34,626		
baseline outgoing sales	228,546	0	228,546		
baseline employee/visitor	264,160	0	264,160	1,798,126	miles

	Direct To SP	Through Gold Coast	Total		
project incoming waste	707,868	561,099	1,268,967		
project incoming deliveries	82,980	0	82,980		
project outgoing sales	535,809	0	535,809		
project employee/visitor	322,400	0	322,400	2,210,155	miles
			diff	412,030	
			diff project:baseline	23%	
			Total miles from Project tab:	2,392,308	
			diff this method vs project tab method	8.2%	

County of Ventura

Waste Disposal Report
by Jurisdiction

Table B8 - Cal Recycle Disposal Rate Statistics - New Tons

(CalRecycle report only accounts for landfilled material, not what is currently being composted)

(http://www.calrecycle.ca.gov/LGCentral/Reports/jurisdiction/diversiondisposal.aspx)

	Jurisdiction	2014 (most current)			2013			2012		
		disposal (tons)	population	disposal rate (lb/per./d)	disposal (tons)	population	disposal rate (lb/per./d)	disposal (tons)	population	disposal rate (lb/per./d)
West County	Camarillo	45,359	66,752	3.7	50,607	66,428	4.2	47,898	66,407	4.0
	Carpinteria (SB County)	9,240	13,442	3.8	10,336	13,099	4.3	10,990	13,076	4.6
	Ojai	7,070	7,594	5.1	8,209	7,548	6.0	8,612	7,535	6.3
	Oxnard	249,317	203,645	6.7	239,868	200,855	6.5	228,729	200,390	6.3
	Port Hueneme	15,324	22,399	3.7	15,510	22,024	3.9	14,884	21,682	3.8
	San Buenaventura	116,973	108,961	5.9	113,462	108,294	5.7	111,834	107,166	5.7
	Santa Paula	20,442	30,448	3.7	20,284	29,953	3.7	19,149	29,882	3.5
	1/2 of Unincorporated	62,162	48,657	7.0	58,116	48,295	6.6	56,687	47,388	6.6
East County	Fillmore	9,939	15,339	3.6	10,228	15,175	3.7	10,861	15,145	3.9
	Moorpark	23,226	35,172	3.6	23,012	34,904	3.6	22,131	34,826	3.5
	Simi Valley	89,646	126,305	3.9	90,875	125,558	4.0	88,397	125,317	3.9
	Thousand Oaks	104,095	129,039	4.4	105,824	128,143	4.5	104,424	128,031	4.5
	1/2 of Unincorporated	62,162	48,657	7.0	58,116	48,295	6.6	56,687	47,388	6.6
	Total	**814,955**	856,409	5.2	**804,447**	848,570	5.2	**781,282**	844,232	5.1
	East County	289,068	354,512	4.5	35%					
	West County	525,886	501,898	5.7	65%					
	West West County	157,320	175,554	4.9						

2008 Cal Recycle Waste Characterization Report

Other Organics Fraction:	32.4%
Food (included in Other Organics Fraction):	15.5%
Paper:	17.3%
Remainder/Composite Paper (included in Paper):	5.2%
(This % used to estimate soiled paper that is not recycled)	
Total organics & paper fraction:	37.6%

Countywide New Tons	**Percent of Total Waste**	**Ton/year**
total compostable/mulch [1.]	40.5%	330,057
food waste fraction [1.]	18.1%	147,507

PROJECT	**West County New Tons**	**Percent of Total Waste**	**Ton/year**
	total compostable/mulch [1.]	**40.5%**	**212,984**
	food waste fraction [1.]	**18.1%**	**95,185**
	2014 baseline tons Oxnard & SP:	green:	98,225
	(M. Harrison update 5/13/16)	food:	15,637
			113,862
	Total potential tons for Santa	green:	216,023
	Paula project:	food:	110,822
			326,846

West, West County - 6859 Arnold Road [2,3.]	**Percent of Total Waste**	**Ton/year**
total organics & paper fraction [1.]	40.5%	63,715
food waste fraction [1.]	18.1%	28,475

FINAL 2014 Cal Recycle Waste Characterization Report - Disposal Facility Based

Table 33: Selected Compost/Mulch Material Types, Disposed Composition by Sector		**WEST COUNTY 2014 TONS**
Other Miscellaneous Paper - Compostable	0.2%	1,052
Remainder/Composite Paper - Compostable	6.6%	34,708
Food	18.1%	95,185
Leaves and Grass	3.8%	19,984
Prunings and Trimmings	3.1%	16,302
Branches and Stumps	1.7%	8,940
Lumber - Clean Dimensional Lumber	3.2%	16,828
Lumber - Clean Engineered Wood	1.7%	8,940
Lumber - Clean Pallets & Crates	2.1%	11,044
	40.5%	212,984

1. source: 2014 Cal Recycle Waste Characterization Report (latest study)
2. west, west county - Camarillo, Ojai, Port Hueneme, half Ventura, & 25% unincorporated
3. current site receiving 100% of the other organic waste demand and only 15% of the food waste demand

NOTE: Food above includes post consumer waste. Food is defined in CalRecycle 2014 study as:

Food means food material resulting from the processing, storage, preparation, cooking, handling, or consumption of food. This type includes material from industrial, commercial, or residential sources. Examples include discarded meat scraps, dairy products, eggshells, fruit or vegetable peels, and other food items from homes, stores, and restaurants. This type includes grape pomace and other processed residues or material from canneries, wineries, or other industrial sources.

APPENDIX C

CRITERIA POLLUTANT AND GHG EMISSIONS CALCULATIONS

Activity Level Assumptions (pg 1 of 2)

Stationary Source Activities

Parameter	Baseline (Oxnard + Santa Paula)			Post-Project Total			Project Increment		
	Peak Year	Peak Day	Peak Hour	Peak Year	Peak Day	Peak Hour	Peak Year	Peak Day	Peak Hour
Stockpiling and Processing (tons)	113,862	343	34	295,000	889	56	181,138	546	22
Windrow Composting (tons)	98,225	296	30	180,000	542	34	81,775	246	4
Anaerobic Digestion (AD) Throughput	0	0	0	40,000	121	8	40,000	121	8
Covered Aerated Storage Piles (CASP, tons)	15,637	47	5	75,000	226	14	59,363	179	9
Finished compost storage and loadout	56,406	239	24	134,968	571	36	78,562	332	12

Open windrow active and curing phase composting - includes post AD & CASP material	256,350
Windrow turning - includes post AD & CASP material	256,350
Screening processs-post composting, CASP and AD	134,968
Screening drops - post composting, CASP and AD	134,968

	Baseline	Project	SCAQMD 1133-3	SJVAPCD 4566
Green material stockpile storage pre-processing (days)	5	2	NA	3
Food material stockpile storage pre-processing (days) [1]	0	0	2	3

1 - Currently food waste is processed immediately, for Project it will go directly to a biofilter controlled building

On Road Vehicle Source Activities

Vehicle Type	Baseline VMT (Oxnard + Santa Paula)			Post-Project Total VMT			Project Increment		
	Per Year	Peak Day	Peak Hour	Per Year	Peak Day	Peak Hour	Per Year	Peak Day	Peak Hour
HHD Solid Waste Collection Truck (Diesel)	390,009	1,618	162	282,263	1,218	122	-107,746	-400	-40
HHD Solid Waste Collection Truck (CNG)	260,006	1,079	108	188,175	812	81	-71,831	-267	-27
HHD Fleet Truck (Diesel)	681,015	3,221	322	650,459	3,102	310	-30,556	-119	-12
Light Duty Truck (Gasoline)	101,468	391	39	474,506	2,032	203	373,038	1,641	164
Light Duty Truck (Diesel)	101,468	391	39	474,506	2,032	203	373,038	1,641	164
Passenger Cars (Gasoline)	264,160	980	98	322,400	1,380	138	58,240	400	40
Totals:	**1,798,126**	**7,680**	**768**	**2,392,309**	**10,576**	**1,057**	**594,183**	**2,896**	**289**

On-Site Vehicle Miles

Vehicle	Route	BASELINE (Oxnard + Santa Paula)			PROJECT		
		Vehicles per year	Miles/trip	Ave. Weight (tons)[1]	Vehicles per year	Miles/trip	Ave. Weight (tons)[1]
HHD Solid Waste Collection Truck	Entrance-Tipping	6,576	0.24	20.4	19,000	0.73	20.5
HHD Fleet Truck from MRFs	Entrance-Tipping	3,061	0.24	23.0	6,225	0.73	23.9
Light Duty Truck - Business/Self Haul	Entrance-Tipping	7,520	0.24	3.5	32,159	0.73	3.3
HHD Fleet - Roll off	Entrance-Tipping	1,204	0.24	17.4	1,439	0.73	17.5
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	Entr.-Sales Yard	690	0.19	22.5	1,788	0.30	22.5
HHD Fleet Truck - Finished Compost, Mulch, etc.	Sales Yard-Entr.	5,446	0.45	19.1	15,960	0.45	19.1
Light Duty Truck - Outgoing Sales	Sales Yard-Entr.	2,172	0.45	2.8	6,365	0.45	2.8
Avoided Landfill Trips- HHD from MRF	@ Landfill	10,158	1.67	23.9	---	---	---
1 - average of loaded & empty vehicle	Total:	**36,827**		Total:	**82,937**		

Activity Level Assumptions (pg 2 of 2)

Freeway to Entrance Vehicle Miles (for HRA)

	BASELINE (SP)	PROJECT	
Vehicle	**Vehicles per year**	**Vehicles per year**	**Miles**
HHD Solid Waste Collection Truck (Diesel)	2,098	11,400	6.20
HHD Solid Waste Collection Truck (CNG)	1,398	7,600	6.20
HHD Fleet Truck from MRFs	1,547	6,225	6.20
Light Duty Truck - Business/Self Haul	2,491	32,159	6.20
HHD Fleet - Roll off	772	1,439	6.20
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	0	1,788	6.20
HHD Fleet Truck - Finished Compost, Mulch, etc.	1,580	15,960	6.20
Light Duty Truck	1,572	6,365	6.20
Total:	**11,459**	**82,937**	

Project Assumptions

Parameter	Baseline	Project
Incoming Waste Trip Days/Year	312	260
Incoming waste deliveries hours per day (7AM - 5P	10	10
Outgoing Sales/Incoming Vendor/Visitor/ Trip Day	260	260
Increase From Average to Peak Day (per M. Harris	10%	10%
feedstock processing days/year	312	365
feedstock processing hours/day	10	16
active composting	365	365
Windrow & outdoor material processing days/year	312	365
Windrow & outdoor material processing hours/day	12	12

Throughputs	Food	Green	Total
2014 baseline incoming feedstock (tons)	15,637	98,225	113,862
Project incoming feedstock (tons)	65,500	229,500	295,000
Project increment (tons)	49,863	131,275	181,138
Project:Baseline ratio	4.19	2.34	2.59

BASELINE:

Source	Peak Day Emissions (lb/day)						Peak Year Emissions (ton/year)						
	ROC	NOx	CO	PM10	PM2.5	NH3	ROC	NOx	CO	PM10	PM2.5	NH3	CO2e (MT)
Stationary													
Material Handling Fugitive Dust				4.22	1.74					0.59	0.25		
Windrow/CASP/AD Volatiles	1473.4					395	244.5					65.6	
Avoided Landfill GHG*													58,891
Avoided Landfill Flare Emissions	26.2	157.0	523.4	52.3	52.3		4.8	28.7	95.5	9.6	9.6		
Stationary Total	1,499.6	157.0	523.4	56.6	54.1	395.1	249.2	28.7	95.5	10.1	9.8	65.6	58,891
Mobile													
Off Road Engine Exhaust **	8.2	118.9	189.6	4.7	4.3		1.29	18.55	29.58	0.74	0.68		2,547
Motor Vehicle Fugitive PM				23.22	2.32					3.96	0.40		
Motor Vehicle Exhaust	3.45	110.36	36.43	0.71	0.68		0.538	17.2	5.7	0.11	0.11		3217
Mobile Total	11.7	229.3	226.1	28.7	7.3	0.0	1.8	35.8	35.3	4.8	1.2	0.0	5,764

*Alternative avoided landfill GHG emissions using CARB CERFs: 88,676 MT CO2e/year

** Does not account for emissions from landfill handling of diverted compostables

PROJECT:

Source	Peak Day Emissions (lb/day)						Peak Year Emissions (ton/year)						
	ROC	NOx	CO	PM10	PM2.5	NH3	ROC	NOx	CO	PM10	PM2.5	NH3	CO2e (MT)
Stationary													
Material Handling Fugitive Dust				8.79	3.07					1.36	0.51		
Windrow/CASP/AD Volatiles	1,602					391	265.75					64.935	
AD CHP Engine Exhaust	7.4	38.9	58.3	0.7	0.6		1.35	7.09	10.64	0.12	0.11		8.06
AD Flare Emissions	0.2	0.2	1.3	0.018	0.016		0.03	0.04	0.24	0.003	0.003		0.24
Stationary Total	1,609.3	39.1	59.6	9.5	3.7	391.4	267.1	7.1	10.9	1.5	0.6	64.9	8
Mobile													
Off Road Engine Exhaust	4.4	26.3	126.0	1.1	1.0		0.81	4.81	22.99	0.20	0.19		2,172
Motor Vehicle Fugitive PM				3.02	0.30					0.39	0.04		
Motor Vehicle Exhaust	2.17	68.49	40.25	0.30	0.28		0.28	8.90	5.23	0.04	0.04		2,835
Mobile Total	6.6	94.8	166.2	4.4	1.6	0.0	1.1	13.7	28.2	0.6	0.3	0.0	5,007

PROJECT INCREMENT:

Source	Peak Day Emissions (lb/day)						Peak Year Emissions (ton/year)						
	ROC	NOx	CO	PM10	PM2.5	NH3	ROC	NOx	CO	PM10	PM2.5	NH3	CO2e (MT)
Stationary													
Material Handling Fugitive Dust				4.58	1.33					0.77	0.26		
Windrow/CASP/AD Volatiles	128.34					-3.71	21.29					-0.62	
Avoided Landfill GHG													-58,891
Avoided Landfill Flare Emissions	-26.2	-157.0	-523.4	-52.3	-52.3		-4.8	-28.7	-95.5	-9.6	-9.6		
AD CHP Engine Exhaust	7.38	38.85	58.28	0.66	0.61		1.35	7.09	10.64	0.12	0.11		8.06
AD Flare Emissions	0.18	0.24	1.30	0.02	0.02		0.03	0.04	0.24	0.00	0.00		0.24
Stationary Total	109.7	-117.9	-463.8	-47.1	-50.4	-3.7	17.9	-21.5	-84.6	-8.7	-9.2	-0.6	-58,883.1
Mobile													
Off Road Engine Exhaust	-3.8	-92.6	-63.7	-3.6	-3.3		-0.48	-13.74	-6.59	-0.53	-0.49		-375
Motor Vehicle Fugitive PM				-20.20	-2.02					-3.56	-0.36		
Motor Vehicle Exhaust	-1.28	-41.87	3.82	-0.42	-0.40		-0.26	-8.31	-0.45	-0.07	-0.07		382
Mobile Total	-5.1	-134.4	-59.8	-24.2	-5.7	0.0	-0.7	-22.1	-7.0	-4.2	-0.9	0.0	-757

Emissions Factors

Assumptions:

Drop points: Material receiving, processing, stockpile: Total of 5 drop points (a) 1-drop point at tipping floor; (b) 2-drop points transfer to trommel screen and screen to picking line; (c) 1 drop point out of grinder (d) 1 drop point at destination(windrow, CASP or AD).
Open windrow active and curing phase composting. Total of 2 drops for forming the compost pile from the ground material stockpile or for loading CASP or for loading AD.
Post composting, CASP and AD screening: 2 drops, one into screen, one out of screen
Finished compost storage and loadout operation: 2 drops, one to final product storage pile and one into sales delivery vehicle.
Controls - water sprays as needed. Incoming moisture content of feedsock is already high. Water sprays used during processing (see below). AD system is enclosed.

Screening: Generally no controls are used due to high feedstock moisture content - except for screening inside the food material building (building exhaust PM filter). Water sprays available throughout process if needed.

Grinding: Generally no controls are used due to high feedstock moisture content - except for grinding inside the food material building (building exhaust PM filter). Water sprays available throughout process if needed.

Post-Grind Compost Windrows: Piles are water sprayed to maintain moisture content of piles.

Material moisture content: Incoming green material: 25% Digestate out of AD: 45% CASP feedstock: 55% (taken from CASP research report) Correct
(D. Green email 9/30/36) Incoming food material: 85% Curing piles: 25%- 45% In CASP material: 43.3% (taken from CASP research report) Correct
Composting windrows: 25% - 45%

Assumed Baseline Landfill Emissions: Assume no processing and 2 drop points - from waste hauler truck to tipping location, from a loader to final disposition.

Emission Factors: (see Air Quality and Greenhouse Gas Technical Report, Tajiguas Landfill Resource Recovery Project Santa Barbara County, California, July 2014)

Process Fugitive PM - Drop points: From SJVAPCD "2006 Area Source Emissions Inventory Methodology, 199 – COMPOSTING WASTE DISPOSAL"
- use the AP-42 crushed stone emission factor (AP-42, Table 11.19.2-2) as a conservative estimate

uncontrolled emission factor:	0.0011	lb-PM10/ton (AP-42, Table 11.19.2-2)	
Control efficiency:	70%	water sprays (SJVAPCD & VCAPCD 2012 emissions inventory)	
controlled emission factor:	0.000330	lb-PM10/ton	
PM2.5 : PM10 ratio:	0.034	lb-PM2.5/lb-PM10 (assuming grain elevator fraction- SCAQMD CEIDARS "Methodology to Calculate Particulate Matter (PM) 2.5" October 2006	
controlled emission factor:	0.000011	lb-PM2.5/ton	

For drops in food material building assume 99% PM10 control due to use of particulate filter on building exhaust:
controlled emission factor: 0.00001 lb-PM10/ton
controlled emission factor: 0.0000004 lb-PM2.5/ton

Process Fugitive PM - Screening From AP-42, Table 11.19.2-2 Crushed Stone Processing and Pulverized Mineral Processing

uncontrolled emission factor:	0.0087	lb-PM10/ton
controlled emission factor:	0.00074	lb-PM10/ton - water sprays
controlled emission factor:	0.000050	lb-PM2.5/ton - water sprays

For screening in food material building assume 99% PM10 control due to use of particulate filter on building exhaust:
controlled emission factor: 0.00009 lb-PM10/ton
controlled emission factor: 0.0000059 lb-PM2.5/ton

Process Fugitive PM - Grinding: From BAAQMD District Permit Handbook, Section 11.13 Tub Grinders - emission factor for "Log Debarking" from a previous edition of AP-42, Table 10.3-1

uncontrolled emission factor:	0.024	lb-TSP/ton
uncontrolled emission factor:	0.0117432	lb-PM10/ton (48.93% of TSP - VCAPCD 2012 emissions inventory)
Control efficiency:	50%	water sprays (BAAQMD & VCAPCD 2012 emissions inventory)
controlled emission factor:	0.005872	lb-PM10/ton
PM2.5 : PM10 ratio:	0.708	lb-PM2.5/lb-PM10 (assuming wood product sawing fraction- SCAQMD CEIDARS "Methodology to Calculate Particulate Matter (PM) 2.5" October 2006
uncontrolled emission factor:	0.008314	lb-PM2.5/ton
controlled emission factor:	0.004157	lb-PM2.5/ton

For grinding in food material building assume 99% PM10 control due to use of particulate filter on building exhaust:
controlled emission factor: 0.00012 lb-PM10/ton
controlled emission factor: 0.00008 lb-PM2.5/ton

Process Fugitive PM - Compost Windrows Windrow PM10 stockpile wind blown emissions not addressed in Tajiguas Landfill air study. **Windrow turning treated like a drop point. Windrows turned 5 times during composting.**

Stockpile & Windrow Turning: From SJVAPCD "2006 Area Source Emissions Inventory Methodology, 199 – COMPOSTING WASTE DISPOSAL"
- PM10 emissions during the turning of the active phase windrows and forming of the curing phase windrows are assumed to be negligible due to the high moisture content of materials handled (moisture content is typically 40% to 65%).

On-site mobile vehicle dust emissions: Considers delivery vehicle travel only. Dust emissions from loader and other onsite mobile travel not considered because they move too slow.
For Project - on-site roads will be paved or cement treated (M. Harrison 10/7/16 email). For baseline all on-site roads are essentially unpaved (D. Green 10/7/16).

Unpaved Industrial Roads (AP42 13.2.2)

Baseline dust supression watering = as needed about once an hour minimum, 20,000 gallons per day (D. Green 10/10/16)

EF = $k * (s / 12)^a * (W / 3)^b$ or $k * (6.4/12)^{0.9} * (W / 3)^{0.45}$

k= Constants (AP42) k for PM10 1.5 k for PM2.5 0.15
a, b = Constants (AP42) a= 0.9 b= 0.45
s = Silt content of unpaved surface in percent (%) s = 6.4 AP42 for landfill - also mean for crushed gravel/limestone roads
W = Average vehicle weight in tons W = vehicle specific (see tables below)

SCAQMD CEQA Table XI-D unpaved road control factors:
84% Apply chemical dust suppressant annually
99% Pave unpaved roads

% control baseline = **84%** assuming 15 MPH limit, hourly watering plus high moisture retention of compost on roads inside facility is equivalent to chemical dust supression
% control project = **99%** assuming 15 MPH limit, cement treated roads, watering 3X daily, high moisture content of compost on roads inside facility nearly equivalent to paving

Assumed Baseline Landfill Emissions: Assume all waste delivery vehilces are HHD tractor trailers and onsite travel distance is from scale house to center of landfill.
8,800 (feet) 1.67 (miles) round trip distance from Toland scale house to center of landfill on existing landfill roads (Google Earth)
Assume paved roads (best case lowest emissions) and water used to supress dust.

Baseline Emissions

Process Fugitive PM: peak day factor: 110% mass reduction from composting: 50%

Parameter	Throughput (wet tons)			Days/year	# of drops	Emission Factor (lb/ton)		Fugitive PM Emissions: Annual (lb/year)		Average Day (lb/day)		Peak Day (lb/day)	
	Per year	Average Day	Peak Day			PM10	PM2.5	PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
Material receiving, processing, stockpile	113,862	365	401	312	5	0.000330	0.000011	188	6.4	0.60	0.020	0.66	0.02
Grinding - green & food material	113,862	365	401	312	1	0.005872	0.004157	669	473.3	2.14	1.517	2.36	1.67
Open windrow active and curing phase composting	113,862	365	401	312	2	0.000330	0.000011	75	2.6	0.24	0.008	0.26	0.01
Windrow turning	85,397	274	301	312	5	0.000330	0.000011	141	4.8	0.45	0.015	0.50	0.02
Screening process - post composting, CASP and AD	56,931	182	201	312	1	0.00074	0.000050	42	2.8	0.14	0.009	0.15	0.01
Screening drops	56,931	182	201	312	2	0.000330	0.000011	38	1.3	0.12	0.004	0.13	0.00
Finished compost storage and loadout operation	56,406	217	239	260	2	0.000330	0.000011	37	1.3	0.14	0.005	0.16	0.01
							TOTALS:	**1,189**	**492**	**3.8**	**1.6**	**4.2**	**1.7**

On-Site Motor Vehicle Fugitive PM:

Vehicle	Use	Route	Trip Count: Annual (#/yr)	Trip Count: Daily (#/day)	Distance (Miles/trip)	Daily VMT (Miles/day)	Avg Weight (tons)[1]	Days/year	Emission Factor (lb/mile): PM10	Emission Factor (lb/mile): PM2.5	Control (%)	Emissions (lb/year): PM10	Emissions (lb/year): PM2.5	Emissions (lb/day): PM10	Emissions (lb/day): PM2.5
HHD Solid Waste Collection Truck	Feedstock Delivery	Entrance-Tipping	6,576	21.1	0.24	5.05	20.4	312	2.02	0.20	84%	508	50.8	1.63	0.16
HHD Fleet Truck from MRFs	Feedstock Delivery	Entrance-Tipping	3,061	9.8	0.24	2.35	23.0	312	2.13	0.21	84%	250	25.0	0.80	0.08
Light Duty Truck - Business/Self Haul	Feedstock Delivery	Entrance-Tipping	7,520	24.1	0.24	5.77	3.5	312	0.92	0.09	84%	264	26.4	0.85	0.08
HHD Fleet - Roll off	Feedstock Delivery	Entrance-Tipping	1,204	3.9	0.24	0.92	17.4	312	1.88	0.19	84%	87	8.7	0.28	0.03
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	Resale Delivery	Entrance-Sales Yard	690	2.7	0.19	0.50	22.5	260	2.11	0.21	84%	44	4.4	0.17	0.02
HHD Fleet Truck - Finished Compost, Mulch, etc.	Outgoing Sales	Sales Yard-Entrance	5,446	20.9	0.45	9.32	19.1	260	1.96	0.20	84%	761	76.1	2.93	0.29
Light Duty Truck	Outgoing Sales	Sales Yard-Entrance	2,172	8.4	0.45	3.72	2.8	260	0.82	0.08	84%	127	12.7	0.49	0.05
Avoided Landfill Trips- HHD from MRF	Trash to Landfill	@ Toland Landfill	10,158	27.8	1.67	46.38	23.9	365	2.17	0.22	84%	5871	587.1	16.09	1.61
1 - average of loaded & empty vehicle		**Totals:**	**36,827**	**119**		**74**					**Totals:**	**7,912**	**791**	**23.22**	**2.32**

Project Emissions

Process Fugitive PM: peak day factor: 110%

Parameter	Throughput (wet tons)			Days/year	# of drops	Emission Factor (lb/ton)		Fugitive PM Emissions: Annual (lb/year)		Average Day (lb/day)		Peak Day (lb/day)	
	Per year	Average Day	Peak Day			PM10	PM2.5	PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
Material receiving, processing, stockpile - green	229,500	883	971	260	5	0.000330	0.000011	379	12.87	1.46	0.05	1.60	0.05
Material receiving, processing, stockpile - food	65,500	252	277	260	5	0.00001	0.0000004	4	0.12	0.01	0.00	0.02	0.00
Screening - green material building	229,500	629	692	365	1	0.00074	0.000050	170	11.48	0.47	0.03	0.51	0.03
Screening - food material building	65,500	179	197	365	1	0.00009	0.0000059	6	0.39	0.02	0.00	0.02	0.00
Grinding - green material building	229,500	629	692	365	1	0.005872	0.004157	1,348	954.05	3.69	2.61	4.06	2.88
Grinding - food material building	65,500	179	197	365	1	0.00012	0.00008	8	5.45	0.02	0.01	0.02	0.02
Open windrow active and curing phase composting	256,350	702	773	365	2	0.000330	0.000011	169	5.75	0.46	0.02	0.51	0.02
Windrow turning	256,350	702	773	365	5	0.000330	0.000011	423	14.38	1.16	0.04	1.27	0.04
Screening processs-post composting, CASP and AD	134,968	370	407	365	1	0.000330	0.000011	45	1.51	0.12	0.00	0.13	0.00
Screening drops - post composting, CASP and AD	134,968	370	407	365	2	0.000330	0.000011	89	3.03	0.24	0.01	0.27	0.01
Finished compost storage and loadout operation	134,968	519	571	260	2	0.000330	0.000011	89	3.03	0.34	0.01	0.38	0.01
							TOTALS:	**2,728**	**1,012**	**8.0**	**2.8**	**8.8**	**3.1**

On-Site Motor Vehicle Fugitive PM:

Vehicle	Use	Route	Trip Count: Annual (#/yr)	Trip Count: Daily (#/day)	Distance (Miles/trip)	Daily VMT (Miles/day)	Avg Weight (tons)[1]	Days/year	Emission Factor (lb/mile): PM10	Emission Factor (lb/mile): PM2.5	Control (%)	Emissions (lb/year): PM10	Emissions (lb/year): PM2.5	Emissions (lb/day): PM10	Emissions (lb/day): PM2.5
HHD Solid Waste Collection Truck	Feedstock Delivery	Entrance-Tipping	19,000	73.1	0.73	53.40	20.5	260	2.02	0.20	99%	281	28.1	1.08	0.11
HHD Fleet Truck from MRFs	Feedstock Delivery	Entrance-Tipping	6,225	23.9	0.73	17.50	23.9	260	2.17	0.22	99%	99	9.9	0.38	0.04
Light Duty Truck - Business/Self Haul	Feedstock Delivery	Entrance-Tipping	32,159	123.7	0.73	90.39	3.3	260	0.89	0.09	99%	210	21.0	0.81	0.08
HHD Fleet - Roll off	Feedstock Delivery	Entrance-Tipping	1,439	5.5	0.73	4.05	17.5	260	1.88	0.19	99%	20	2.0	0.08	0.01
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	Resale Delivery	Entrance-Sales Yard	1,788	6.9	0.30	2.08	22.5	260	2.11	0.21	99%	11	1.1	0.04	0.00
HHD Fleet Truck - Finished Compost, Mulch, etc.	Outgoing Sales	Sales Yard-Entrance	15,960	61.4	0.45	27.90	19.1	260	1.96	0.20	99%	142	14.2	0.55	0.05
Light Duty Truck	Outgoing Sales	Sales Yard-Entrance	6,365	24.5	0.45	11.13	2.8	260	0.82	0.08	99%	24	2.4	0.09	0.01
1 - average of loaded & empty vehicle		**Totals:**	**82,937**	**319**		**206**					**Totals:**	**786**	**79**	**3.0**	**0.3**

Project Increment Emissions

	Avg. Annual Emissions (lbs/year)		Avg. Day Emissions (lbs/day)		Peak Day Emissions (lbs/day)	
	PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
Incremental Process Fugitive PM:	1,538	520	4.16	1.21	4.58	1.33
Incremental On-Site Motor Vehicle Fugitive PM:	-7,125	-713	-20.20	-2.02	-22.22	-2.22
Total Fugitive PM Project Increment:	**-5,587**	**-193**	**-16**	**-0.8**	**-18**	**-0.9**

Emissions Factor

Parameter	Factor	Unit	Source of Emission Factor
Stockpiling VOC	0.20	lbs/wet ton-day	ARB Emissions Inventory Methodology for Composting Facilities, Table III-1, 3/2/2015
Stockpiling NH3	N/A	lbs/wet ton-day	ARB Emissions Inventory Methodology for Composting Facilities, Table III-1, 3/2/2015
Compost + Cure VOC	3.58	lbs/wet ton	ARB Emissions Inventory Methodology for Composting Facilities, Table III-1, 3/2/2015
Compost + Cure NH3	0.78	lbs/wet ton	ARB Emissions Inventory Methodology for Composting Facilities, Table III-1, 3/2/2015
Compost + Cure CH4	0.049	MT CO2e/wet ton	CARB, Table 5 "Method for Estimating Greenhouse Gas Emission Reductions from Diversion of Organic Waste from Landfills to Compost Facilities", March 2016
Compost + Cure N2O	0.021	MT CO2e/wet ton	
Compost + Cure CO2e*	0.07	MT CO2e/wet ton	Total of CH4 and N2O
Landfill VOC (NMOC)**	3.50	lbs/wet ton	NMOC Landgem Model - E.F. in 2018 for long term stream (812.6 tons NMOC for 181,138 tons landfilled) 39% of NMOC is VOC - AP42 2.4 MUNICIPAL SOLID WASTE LANDFILLS - Table 2.4-2
Landfill Methane	208.68	lbs/wet ton	NMOC Landgem Model - 2018 E.F. (18,900 tons Methane for 181,138 tons landfilled)
Landfill NH3 ***	1.461	lbs/wet ton	Landfill NH3 emissions = 0.7% NH3 to methane (Eggleston, 1992)
Landfill CO2e - food	0.69	MT CO2e/wet ton	CARB, Table 11 "Method for Estimating Greenhouse Gas Emission Reductions from Diversion of Organic Waste from Landfills to Compost Facilities", March 2016
Landfill CO2e - green	0.51	MT CO2e/wet ton	
Landfill CO2e - mixed	0.63	MT CO2e/wet ton	
Anaerobic Digester Fugitive VOC, NH3	NA	NA	Assumed to be negligible since gases generated will be collected and either treated and burned in an IC engine (to generate electricity) or flared.

* Note that, according to the CARB source referenced, CO2 emissions from composting are not included in the CO2e calculation because they are biogenic.
**Landgem - the NMOC Concentration CAA default is 4000 ppmv as hexane. Landfill gas is assumed to be 50 % methane and 50% CO2

Emissions Control Efficiency

Emission Source	VOC Control (%)	NH3 Control (%)	Comment
Windrow Composting/Cure	40%	20%	assumes Project piles managed in compliance with SCAQMD's Rule 1133-3.
Covered Aerated Pile	90%	70%	assumes postive air and CARB control factor
Landfill Flare	75.0%	75.0%	approx. combined VOC capture & control efficiency - 75% x 97.7% (AP42 2.4 DRAFT)

Baseline Emissions: peak day factor: 110%

Parameter	Throughput (wet ton/yr)	Peak Year Emissions	Avg. Year Emissions		Average Day Emissions		Peak Day Emissions	
		GHG CO2e (MT/year)	VOC (lb/year)	NH3 (lb/year)	VOC (lb/day)	NH3 (lb/day)	VOC (lb/day)	NH3 (lb/day)
Stockpiling	113,862	0	113,862	0	312	0	343	0
Windrow Composting & Cure	98,225	6,876	210,987	61,292	578	168	636	185
CASP Composting	15,637	1,095	5,598	3,659	15	10	17	11
Landfill (avoided emissions)[1]	181,138	101,356	158,457	66,150	434	181	478	199
Totals:		109,326	488,904	131,101	1,339	359	1,473	395

1 - one year emissions for long term stream in landfill

Project Total Emissions: peak day factor: 110%

Parameter	Throughput (wet ton/yr)	Peak Year Emissions	Avg. Year Emissions		Average Day Emissions		Peak Day Emissions	
		GHG CO2e (MT/year)	VOC (lb/year)	NH3 (lb/year)	VOC (lb/day)	NH3 (lb/day)	VOC (lb/day)	NH3 (lb/day)
Stockpiling	295,000	0	118,000	0	323	0	356	0
Windrow Composting & Cure	180,000	12,600	386,640	112,320	1,059	308	1,165	338
Anaerobic Digestion (AD) [1]	40,000	2,800	0	0	0	0	0	0
CASP Composting	75,000	5,250	26,850	17,550	74	48	81	53
Totals:		20,650	531,490	129,870	1,456	356	1,602	391

1 - Methane and VOC emissions from AD process are assumed to be captured and controlled 99+% by flare or boiler or IC engine. GHG emissions addressed under combustion estimates

Project Increment Emissions

Parameter	Throughput (wet ton/yr)	Peak Year Emissions	Avg. Year Emissions		Average Day Emissions		Peak Day Emissions	
		GHG CO2e (MT/year)	VOC (lb/year)	NH3 (lb/year)	VOC (lb/day)	NH3 (lb/day)	VOC (lb/day)	NH3 (lb/day)
Project Increment	181,138	-88,676	42,586	-1,231	117	-3	128	-4

1 - Increment for Project vs Santa Paula + Oxnard. For analysis above, overall increment = 0.

Based on Cornerstone VCAPCD ATC Application (Sept. 2012) & VCAPCD Engineering Analysis (4/9/2013):

5,000 ton/year material processed assumed in 2012/2013 analysis

Assumptions:

The anaerobioc digester is enclosed. Emissions are collected and treated in the biogas treatment system. No fugitive emissions.

67% green waste and 33% food waste — a single 3.2 MMBtu/hr flare will handle all waste gas

3,000 Biogas production ft3/ton (ZWE estimates — 40,000 tons/year of material processed

600 Biogas energy content btu/ft3 — 1050 APCD btu/ft3 for pipeline natural gas

60% methane content of biogas

8,760 hrs/year max.

Engine - 100kW (145 kW thermal) 2G Cenergy Technologies model 2G 100BG:

100 kW generated

147 BHP

27 ft3/min fuel consumption

14,191,200 ft3/year fuel consumption based on max. hours

229 ft3/min exhaust gas flow

356 °F exhaust gas temperature

Enclosed Emergency Backup Flare (used during engine maintenance, biogas is processed through a carbon filter pre-treatment system for hydrogen sulfide (H2S) and SOx control:

3.2 MMBtu/hr — 60% max. methane content of biogas (flared gas is same as biogas produced)

88 ft3/min fuel consumption max. — 2.11 MMcf/yr based on max. hours

400 max. hrs per year — 99.5% flare ROC control

biogas is processed through a carbon filter pre-treatment system for hydrogen sulfide (H2S) and SOx control

Biofilter, for control of odors from digesters during start-up and termination exhausts (at process termination methane decreases for 20% to 1% methane):

ROC emissions from the biofilter are considered negligible. This is consistent with how the District permits wastewater treatment plants.

Emergency Backup Generator/Diesel Engine (exempt from permit- Rule 23.D.6):

9.38 BHP

Scale up calculations:

120,000,000 expected ft3/year total biogas generated

72,000,000 expected ft3/year total treated biogas (methane) burned in all engines

14,191,200 max. ft3/year of gas burned by one engine

5 # of engines required to burn all gas - used to ratio up emissions from a single engine

AD Engine (2G-Cynergy Lean Biogas Engine)

	Emission Factor (g/BHP-hr) [1]						lb/MMscf
	ROC	NOx	CO	PM [2]	PM2.5 [3]	SO2 [4]	CO2e [5]
AD Engine	0.19	1.00	1.5	0.017	0.016	0.03	247

1 - Emission factors from VCAPCD 4/9/13 as provided by 2G Cenergy

2 - Total PM assumed to be equal to PM10.

3 - PM2.5 emissions factor assumed to be 92% of PM10 based on SCAQMD's *Updated CEIDARS Table with PM2.5 Fractions* for offroad equipment.

4 - SOx emission factor based on 20 ppm H2S in the biogas.

5 - AP42 Table 1.4-2

CO2e emission factor:	lb/MMscf	GWP	Adjusted	
CO2	120000.0	1	120000	
CH4	2.3	21	48.3	
N20	0.64	310	198.4	
		Anthropogenic Gas	120247	lb/MMscf
		Biogenic gas	247	lb/MMscf

	Emissions (lb/hr)							Emissions (ton/year) [1]						
	ROC	NOx	CO	PM	PM2.5	SO2	CO2e	ROC	NOx	CO	PM	PM2.5	SO2	CO2e (MT)
AD Engine	0.31	1.62	2.43	0.03	0.03	0.05	2.0	1.35	7.09	10.64	0.12	0.11	0.21	8.06

1 - Assuming 8,760 hours/year

Backup Flare Emissions:

	Emission Factor (lb/MMBtu) [1]					
	ROC	NOx	CO	PM [2]	PM2.5 [3]	SO2 [4]
Backup Flare	0.0518	0.0680	0.3700	0.0050	0.0046	0.006

1 - Emission factors from VCAPCD 4/9/13 - VCAPCD default factors for waste gas flares

2 - Total PM assumed to be equal to PM10.

3 - PM2.5 emissions factor assumed to be 92% of PM10

4 - SOx emission factor based on 20 ppm H2S in the biogas.

SOx emission factor [g/scf] = 20 [ppmv sulfur] x 10^{-6} x 64 [lb/lb-mole SO2] / 385.5 [scf/lb-mole] x 453.6 g/lb

0.00151 g/scf

0.0000025 g/btu @ 600 btu/ft3

0.000000006 lb/btu

0.006 lb/MMbtu

	Emissions (lb/hr)							Emissions (ton/year) [1]						
	ROC	NOx	CO	PM [2]	PM2.5 [3]	SO2 [4]	CO2e	ROC	NOx	CO	PM	PM2.5	SO2	CO2e (MT)
Backup Flare	0.17	0.22	1.18	0.02	0.01	0.02	1.3	0.03	0.04	0.24	0.003	0.003	0.004	0.24

1 - Assuming 400 hours/year

Emissions Factors

Equipment Information							Base EF (g/hp-hr) [1]							Location
Equipment	**Type**	**Model**	**HP**	**Engine Year**	**Tier**	**Hours/Day**	**NMHC+NOx**	**THC**	**NOx**	**CO**	**PM**	**PM2.5**	**CO2e**	
Baseline														
CATERPILLAR	Excavators	320CL	138	2004	T2	7.5	4.9	0.25	4.66	3.7	0.22	0.202	539.9	Ox
MANITOU	Forklifts	TMT315FL	25	2006	T2	7.5	5.60	0.28	5.32	4.10	0.45	0.414	539.9	Ox
CATERPILLAR	Rubber Tired Loaders	950G	183	2003	T2	7.5	4.90	0.25	4.66	2.60	0.15	0.138	539.9	SP
CATERPILLAR	Rubber Tired Loaders	950G II	183	2005	T2	7.5	4.90	0.25	4.66	2.60	0.15	0.138	539.9	SP
CATERPILLAR	Rubber Tired Loaders	950G	183	2003	T2	7.5	4.90	0.25	4.66	2.60	0.15	0.138	539.9	SP
CATERPILLAR	Rubber Tired Loaders	950H	196	2006	T3	7.5	3.00	0.15	2.85	2.60	0.15	0.138	539.9	Ox
CATERPILLAR	Rubber Tired Loaders	950G	183	2003	T2	7.5	4.90	0.25	4.66	2.60	0.15	0.138	539.9	Ox
CATERPILLAR	Rubber Tired Loaders	950GII	183	2004	T2	7.5	4.90	0.25	4.66	2.60	0.15	0.138	539.9	Ox
CATERPILLAR	Rubber Tired Loaders	950G II	183	2004	T2	7.5	4.90	0.25	4.66	2.60	0.15	0.138	539.9	Ox
CATERPILLAR	Rubber Tired Loaders	950G	207	2004	T2	7.5	4.90	0.25	4.66	2.60	0.15	0.138	539.9	Ox
CATERPILLAR	Rubber Tired Loaders	950G II	183	2004	T2	7.5	4.90	0.25	4.66	2.60	0.15	0.138	539.9	Ox
CATERPILLAR	Skid Steer Loaders	256C	74	2007	T2	7.5	5.60	0.28	5.32	3.70	0.30	0.276	539.9	Ox
CATERPILLAR	Skid Steer Loaders	242B3	71	2012	T4I	7.5	3.50	0.18	3.33	3.70	0.22	0.202	539.9	Ox
NEW HOLLAND	Backhoes	7810	75	1986	T0	4	N/A	1.30	6.00	15.50	0.60	0.552	539.9	SP
NEW HOLLAND	Backhoes	7810	75	1987	T0	4	N/A	1.30	6.00	15.50	0.60	0.552	539.9	SP
Int'l MaxxForce 13	Water Truck	---	475	2009	---	6.5	1.2	0.06	1.14	15.5	0.01	0.009	539.9	Ox
Navistar E210	Dump Truck	---	210	1992	---	6.5	N/A	1.20	5.00	15.50	0.25	0.230	539.9	Ox
Water Truck	Water Truck	---	475	2004	---	6.5	2.5	0.125	2.375	15.5	0.1	0.092	539.9	SP
Dump Truck	Dump Truck	---	210	2010	---	4.0	N/A	0.14	0.20	15.50	0.01	0.009	539.9	SP
MOORBARK	Grinder	1300A	860	2006	T2	6.5	4.80	0.24	4.56	2.60	0.15	0.138	539.9	SP
MORBARK	Grinder	6600 WOODHOG	650	2005	T2	6.5	4.80	0.24	4.56	2.60	0.15	0.138	539.9	Ox
Powerscreen	Screen	3300	275	2010	T3	6.5	3.00	0.15	2.85	2.60	0.15	0.138	539.9	Ox
CEC	Screen	5x12	91	2010	T3	6.5	3.50	0.18	3.33	3.70	0.30	0.276	539.9	Ox
CEC	Screen	5X12	91	2010	T3	6.5	3.50	0.18	3.33	3.70	0.30	0.276	539.9	Ox
WILDCAT	Screen	521	99	2012	T4	6.5	N/A	0.14	0.3	3.70	0.015	0.014	539.9	Ox
WILDCAT	Screen	626	125	2012	T4	6.5	N/A	0.14	0.3	3.70	0.015	0.014	539.9	Ox
WILDCAT	Screen	626	125	2012	T4	6.5	N/A	0.14	0.3	3.70	0.015	0.014	539.9	SP
WILDCAT	Screen	626	125	2012	T4	6.5	N/A	0.14	0.3	3.70	0.015	0.014	539.9	SP
Project														
CATERPILLAR	Wheel Loader	950K	211	2019	T4F	7.5	N/A	0.14	0.3	2.6	0.015	0.014	539.9	SP
CATERPILLAR	Wheel Loader	950K	211	2019	T4F	7.5	N/A	0.14	0.3	2.6	0.015	0.014	539.9	SP
CATERPILLAR	Wheel Loader	950K	211	2019	T4F	7.5	N/A	0.14	0.3	2.6	0.015	0.014	539.9	SP
CATERPILLAR	Wheel Loader	950K	211	2019	T4F	7.5	N/A	0.14	0.3	2.6	0.015	0.014	539.9	SP
CATERPILLAR	Wheel Loader	950K	211	2019	T4F	7.5	N/A	0.14	0.3	2.6	0.015	0.014	539.9	SP
CATERPILLAR	Wheel Loader	950K	211	2019	T4F	7.5	N/A	0.14	0.3	2.6	0.015	0.014	539.9	SP
CATERPILLAR	Skid Steer Loader	242B Series 3	71	2019	T4F	7.5	3.5	0.18	3.33	3.7	0.022	0.020	539.9	SP
SCARAB	Windrow Turner	Model 27	630	2019	T4F	7.5	N/A	0.14	0.3	2.6	0.015	0.014	539.9	SP
Freightliner	Water Truck - Diesel	FL110	375	2010	---	7.5	N/A	0.14	0.20	15.5	0.01	0.009	539.9	SP
Freightliner	Dump Truck - Diesel	FL110	375	2010	---	7.5	N/A	0.14	0.20	15.5	0.01	0.009	539.9	SP
Toyota	Forklift	8FGU30	51	2010	T3	7.5	3.5	0.175	3.325	3.7	0.3	0.276	539.9	SP
Toyota	Forklift	8FGU30	51	2010	T3	7.5	3.5	0.175	3.325	3.7	0.3	0.276	539.9	SP
MORBARK	Grinder - green	4600XL	1050	2013	T4i	6.5	N/A	0.3	2.6	2.6	0.075	0.069	539.9	SP
MORBARK	Grinder	6600 WOODHOG	650	2005	Electrified	7.5	0	0	0	0	0	0	0	SP
CEC	Screen-It	6X16	97	2010	T3	6.5	3.5	0.175	3.325	3.7	0.3	0.276	539.9	SP
CEC	Screen-It	6X16	97	2010	T3	6.5	3.5	0.175	3.325	3.7	0.3	0.276	539.9	SP
Wildcat	Screen	626	140	2012	Electrified	6.5	0	0	0	0	0	0	0	SP
Wildcat	Screen	626	140	2012	Electrified	6.5	0	0	0	0	0	0	0	SP
Wildcat	Screen	626	140	2012	Electrified	6.5	0	0	0	0	0	0	0	SP

1 - Emission factors assumed the same as emission standards - for both off-road and on-road used off road.

Where standard is for NMHC+NOx emissions assumed to be 5 percent ROC and 95 percent NOx, from Table D-25 of 2011 Carl Moyer Program Guidelines - http://www.arb.ca.gov/msprog/moyer/guidelines/current.htm

CO2e emission factor (includes CO2, N2O, and CH4) based on TCR's "2015 Climate Registry Default Emission Factors" and the brake specific fuel consumption of 0.367 lb/hp-hr from OFFROAD2011.

PM2.5 emissions factor assumed to be 92% of PM10 based on SCAQMD's *Updated CEIDARS Table with PM2.5 Fractions* for offroad equipment.

Total PM assumed to be equal to PM10.

Load factors (below) based on the California Air Resources Board's OFFROAD2011 model documentation (see attached) or from Table D-10 of 2011 Carl Moyer Program Guidelines

Baseline Emissions

Material processing: 312 days/year

Equipment Information						Peak Year Emis. (MT/yr)	Emissions (lb/day)					Santa Paula Emissions for HRA (lbs/day)		
Equipment	**Type**	**Horsepower**	**Load Factor**	**Hours/Year**	**Hours/Day**	**CO2e**	**ROC**	**NOx**	**CO**	**PM10**	**PM2.5**	**Location**	**ROC**	**PM10**
CATERPILLAR	Excavators	138	0.38	2,340	7.5	66.2	0.21	4.03	3.21	0.19	0.18	Ox	0	0
MANITOU	Forklifts	25	0.2	2,340	7.5	6.3	0.02	0.44	0.34	0.04	0.03	Ox	0	0
CATERPILLAR	Rubber Tired Loaders	183	0.36	2,340	7.5	83.2	0.27	5.07	2.83	0.16	0.15	SP	0.27	0.16
CATERPILLAR	Rubber Tired Loaders	183	0.36	2,340	7.5	83.2	0.27	5.07	2.83	0.16	0.15	SP	0.27	0.16
CATERPILLAR	Rubber Tired Loaders	183	0.36	2,340	7.5	83.2	0.27	5.07	2.83	0.16	0.15	SP	0.27	0.16
CATERPILLAR	Rubber Tired Loaders	196	0.36	2,340	7.5	89.1	0.17	3.32	3.03	0.17	0.16	Ox	0	0
CATERPILLAR	Rubber Tired Loaders	183	0.36	2,340	7.5	83.2	0.27	5.07	2.83	0.16	0.15	Ox	0	0
CATERPILLAR	Rubber Tired Loaders	183	0.36	2,340	7.5	83.2	0.27	5.07	2.83	0.16	0.15	Ox	0	0
CATERPILLAR	Rubber Tired Loaders	183	0.36	2,340	7.5	83.2	0.27	5.07	2.83	0.16	0.15	Ox	0	0
CATERPILLAR	Rubber Tired Loaders	207	0.36	2,340	7.5	94.1	0.30	5.73	3.20	0.18	0.17	Ox	0	0
CATERPILLAR	Rubber Tired Loaders	183	0.36	2,340	7.5	83.2	0.27	5.07	2.83	0.16	0.15	Ox	0	0
CATERPILLAR	Skid Steer Loaders	74	0.37	2,340	7.5	34.6	0.13	2.41	1.67	0.14	0.12	Ox	0	0
CATERPILLAR	Skid Steer Loaders	71	0.37	2,340	7.5	33.2	0.08	1.44	1.61	0.10	0.09	Ox	0	0
NEW HOLLAND	Backhoes	75	0.37	1,248	4.0	18.7	0.32	1.47	3.79	0.15	0.13	SP	0.32	0.15
NEW HOLLAND	Backhoes	75	0.37	1,248	4.0	18.7	0.32	1.47	3.79	0.15	0.13	SP	0.32	0.15
Int'l MaxxForce 13	Water Truck	475	0.38	2,028	6.5	197.5	0.16	2.95	40.06	0.03	0.02	Ox	0	0
Navistar E210	Dump Truck	210	0.38	2,028	6.5	87.3	1.37	5.71	17.71	0.29	0.26	Ox	0	0
Water Truck	Water Truck	475	0.38	2,028	6.5	197.5	0.32	6.14	40.06	0.26	0.24	SP	0.32	0.26
Dump Truck	Dump Truck	210	0.38	1,248	4.0	53.7	0.10	0.14	10.90	0.01	0.01	SP	0.10	0.01
MOORBARK	Grinder	860	0.4	2,028	6.5	376.3	1.18	22.46	12.81	0.74	0.68	SP	1.18	0.74
MORBARK	Grinder	650	0.4	2,028	6.5	284.4	0.89	16.97	9.68	0.56	0.51	Ox	0	0
Powerscreen	Screen	275	0.4	2,028	6.5	120.3	0.24	4.49	4.09	0.24	0.22	Ox	0	0
CEC	Screen	91	0.4	2,028	6.5	39.8	0.09	1.73	1.93	0.16	0.14	Ox	0	0
CEC	Screen	91	0.4	2,028	6.5	39.8	0.09	1.73	1.93	0.16	0.14	Ox	0	0
WILDCAT	Screen	99	0.4	2,028	6.5	43.3	0.08	0.17	2.10	0.01	0.01	Ox	0	0
WILDCAT	Screen	125	0.4	2,028	6.5	54.7	0.10	0.21	2.65	0.01	0.01	Ox	0	0
WILDCAT	Screen	125	0.4	2,028	6.5	54.7	0.10	0.21	2.65	0.01	0.01	SP	0.10	0.01
WILDCAT	Screen	125	0.4	2,028	6.5	54.7	0.10	0.21	2.65	0.01	0.01	SP	0.10	0.01
					Total:	**2,546.78**	**8.24**	**118.91**	**189.64**	**4.72**	**4.34**		**3.24**	**1.81**

Post-Project Total Emissions

Material processing: 365 days/year

Equipment Information						Peak Year Emis. (MT/yr)	Emissions (lb/day)				
Equipment	**Type**	**Horsepower**	**Load Factor**	**Hours/Year**	**Hours/Day**	**CO2e**	**ROC**	**NOx**	**CO**	**PM10**	**PM2.5**
CATERPILLAR	Wheel Loader	211	0.36	2,738	7.5	112.2	0.18	0.38	3.26	0.02	0.02
CATERPILLAR	Wheel Loader	211	0.36	2,738	7.5	112.2	0.18	0.38	3.26	0.02	0.02
CATERPILLAR	Wheel Loader	211	0.36	2,738	7.5	112.2	0.18	0.38	3.26	0.02	0.02
CATERPILLAR	Wheel Loader	211	0.36	2,738	7.5	112.2	0.18	0.38	3.26	0.02	0.02
CATERPILLAR	Wheel Loader	211	0.36	2,738	7.5	112.2	0.18	0.38	3.26	0.02	0.02
CATERPILLAR	Wheel Loader	211	0.36	2,738	7.5	112.2	0.18	0.38	3.26	0.02	0.02
CATERPILLAR	Skid Steer Loader	71	0.37	2,738	7.5	38.8	0.08	1.44	1.61	0.01	0.01
SCARAB	Windrow Turner	630	0.4	2,738	7.5	372.1	0.58	1.25	10.82	0.06	0.06
Freightliner	Water Truck - Diesel	375	0.38	2,738	7.5	210.4	0.33	0.47	36.49	0.02	0.02
Freightliner	Dump Truck - Diesel	375	0.38	2,738	7.5	210.4	0.33	0.47	36.49	0.02	0.02
Toyota	Forklift	51	0.2	2,738	7.5	15.1	0.03	0.56	0.62	0.05	0.05
Toyota	Forklift	51	0.2	2,738	7.5	15.1	0.03	0.56	0.62	0.05	0.05
MORBARK	Grinder - green	1050	0.4	2,373	6.5	537.5	1.80	15.63	15.63	0.45	0.41
MORBARK	Grinder	650	0.4	2,738	7.5	0	0	0	0	0	0
CEC	Screen-It	97	0.4	2,373	6.5	49.7	0.10	1.85	2.06	0.17	0.15
CEC	Screen-It	97	0.4	2,373	6.5	49.7	0.10	1.85	2.06	0.17	0.15
Wildcat	Screen	140	0.4	2,373	6.5	0	0	0	0	0	0
Wildcat	Screen	140	0.4	2,373	6.5	0	0	0	0	0	0
Wildcat	Screen	140	0.4	2,373	6.5	0	0	0	0	0	0
					Total:	**2,171.63**	**4.43**	**26.34**	**125.97**	**1.12**	**1.03**

Project Increment Emissions

Parameter	Peak Year Emis. (MT/yr)	Peak Day Emissions (lb/day)				
	CO2e	**ROC**	**CO**	**NOx**	**PM10**	**PM2.5**
Baseline	2,546.8	8.24	118.91	189.64	4.72	4.34
Project	2,171.6	4.43	125.97	26.34	1.12	1.03
Project Increment:	**-375.15**	**-3.81**	**7.06**	**-163.30**	**-3.60**	**-3.31**

Emissions Factors (g/VMT)

Vehicle Information		Baseline 2016 Emission Factors (g/VMT)							
Vehicle Type	**Fuel Type**	**ROC**	**CO**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CO2e**
HHD Solid Waste Collection Truck (Diesel)	Diesel	0.3939	**5.066**	13.14	0.0254	0.0168	0.0161	4,170.0	4,378.4
HHD Solid Waste Collection Truck (CNG)	CNG	0.1249	3.237	6.57	0.0127	0.0017	0.0016	---	418.6
HHD Fleet Truck (Diesel)	Diesel	0.2321	1.026	6.70	0.0159	0.0902	0.0863	1,724.7	1,810.9
Light Duty Truck (Gasoline)	Gasoline	0.0297	1.261	0.15	0.0042	0.0017	0.0016	416.2	437.0
Light Duty Truck (Diesel)	Diesel	0.0186	0.146	0.07	0.0035	0.0066	0.0063	371.1	389.7
Passenger Cars (Gasoline)	Gasoline	0.0271	1.017	0.10	0.0031	0.0018	0.0017	310.5	326.0

Vehicle Information		Project 2019 Emission Factors (g/VMT)							
Vehicle Type	**Fuel Type**	**ROC**	**CO**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CO2e**
HHD Solid Waste Collection Truck (Diesel)	Diesel	0.3165	**7.319**	9.95	0.0194	0.0133	0.0127	3,916.7	4,112.6
HHD Solid Waste Collection Truck (CNG)	CNG	0.1003	4.677	4.97	0.0097	0.0013	0.0013	---	418.6
HHD Fleet Truck (Diesel)	Diesel	0.1374	0.793	4.68	0.0152	0.0324	0.0310	1,662.2	1,745.3
Light Duty Truck (Gasoline)	Gasoline	0.0183	0.892	0.10	0.0038	0.0018	0.0016	384.0	403.2
Light Duty Truck (Diesel)	Diesel	0.0175	0.149	0.05	0.0034	0.0055	0.0053	351.1	368.7
Passenger Cars (Gasoline)	Gasoline	0.0146	0.716	0.07	0.0029	0.0019	0.0017	285.9	300.2

Diesel and gasoline emissions factors are from the EMFAC2011 web tool, utilizng the following assumptions (except where specifically identified as otherwise below): Ventura County, 2019, annual average, combined model year, combined speeds, and the CO2 EF includes the LCFS.

HHD Solid Waste Collection Truck = T7 SWCV vehicle type, diesel

HHD Fleet Truck = HHDT vehicle type (aggregate), diesel

Light Duty Truck = LDT2 vehicle type, diesel and gasoline

Passenger Cars = LDA vehicle type, gasoline

CO2e emissions factor determined by scaling CO2 factor up by 5%, per the methodologies found in the BAAQMD GHG Model (BGM). This accounts for emissions of CH4, N2O, and air conditioner evaporative loss.

CNG Emissions factor (except for CO2e) based on the diesel emissions factors for the same category from EMFAC2011 multiplied by the following diesel to CNG modifiers, which are the bus modifiers from "Emissions of Criteria Pollutants, Toxic Air Pollutants, and Greenhouse Gases, from the Use of Alternative Transportation Modes and Fuels", Institute of Transportation Studies, UC Davis, last updated in 2006. SOx emissions factor is assumed to be half of the diesel factor.

ROC = 0.317 NOx= 0.5 PM10= 0.1

CO= 0.639 SOx= 0.5 PM2.5= 0.1

CNG emissions factor for CO2e (includes CO2, N2O, and CH4) based on TCR's "2014 Climate Registry Default Emissions Factors" and fuel efficiency of 44.8 miles/MMBtu.

Baseline Emissions

Vehicle Type	Baseline VMT		Peak Year Emissions	Peak Day Emissions (lb/day)					
	Peak Year	**Peak Day**	**CO2e (MT/y)**	**ROC**	**NOx**	**CO**	**PM10**	**PM2.5**	**SOx**
HHD Solid Waste Collection Truck (Diesel)	390,009	1,618	1,706.1	1.40	46.83	18.05	0.06	0.06	0.09
HHD Solid Waste Collection Truck (CNG)	260,006	1,079	108.7	0.30	15.62	7.69	0.00	0.00	0.03
HHD Fleet Truck (Diesel)	681,015	3,221	1,232.2	1.65	47.50	7.28	0.64	0.61	0.11
Light Duty Truck (Gasoline)	101,468	391	44.3	0.03	0.13	1.09	0.00	0.00	0.00
Light Duty Truck (Diesel)	101,468	391	39.5	0.02	0.06	0.13	0.01	0.01	0.00
Passenger Cars (Gasoline)	264,160	980	86.0	0.06	0.21	2.20	0.00	0.00	0.01
Total Haul:	**1,533,966**	**6,700**	**3,130.8**	**3.39**	**110.15**	**34.23**	**0.71**	**0.68**	**0.24**
Total Worker:	**264,160**	**980**	**86.0**	**0.06**	**0.21**	**2.20**	**0.00**	**0.00**	**0.01**
Total Overall:	**1,798,126**	**7,680**	**3,216.9**	**3.45**	**110.36**	**36.43**	**0.71**	**0.68**	**0.25**

Post-Project Total Emissions

Vehicle Type	Post-Project Total VMT		Peak Year Emissions	Peak Day Emissions (lb/day)					
	Peak Year	**Peak Day**	**CO2e (MT/y)**	**ROC**	**NOx**	**CO**	**PM10**	**PM2.5**	**SOx**
HHD Solid Waste Collection Truck (Diesel)	282,263	1,218	1,159.8	0.85	26.69	19.63	0.04	0.03	0.05
HHD Solid Waste Collection Truck (CNG)	188,175	812	78.7	0.18	8.90	8.36	0.00	0.00	0.02
HHD Fleet Truck (Diesel)	650,459	3,102	1,134.2	0.94	32.01	5.42	0.22	0.21	0.10
Light Duty Truck (Gasoline)	474,506	2,032	191.2	0.08	0.45	3.99	0.01	0.01	0.02
Light Duty Truck (Diesel)	474,506	2,032	174.8	0.08	0.24	0.67	0.02	0.02	0.02
Passenger Cars (Gasoline)	322,400	1,380	96.7	0.04	0.20	2.18	0.01	0.01	0.01
Total Haul:	**2,069,909**	**9,196**	**2,738.7**	**2.13**	**68.29**	**38.07**	**0.29**	**0.28**	**0.21**
Total Worker:	**322,400**	**1,380**	**96.7**	**0.04**	**0.20**	**2.18**	**0.01**	**0.01**	**0.01**
Total Overall:	**2,392,309**	**10,576**	**2,835.4**	**2.17**	**68.49**	**40.25**	**0.30**	**0.28**	**0.21**

Project Increment Emissions

Vehicle Type	Project Increment VMT		Peak Year Emissions	Peak Day Emissions (lb/day)					
	Peak Year	**Peak Day**	**CO2e (MT/y)**	**ROC**	**NOx**	**CO**	**PM10**	**PM2.5**	**SOx**
HHD Solid Waste Collection Truck (Diesel)	-107,746	-400	-546.3	-0.55	-20.15	1.58	-0.02	-0.02	-0.04
HHD Solid Waste Collection Truck (CNG)	-71,831	-267	-30.0	-0.12	-6.72	0.67	0.00	0.00	-0.01
HHD Fleet Truck (Diesel)	-30,556	-119	-98.0	-0.71	-15.49	-1.86	-0.42	-0.40	-0.01
Light Duty Truck (Gasoline)	373,038	1,641	146.9	0.06	0.31	2.91	0.01	0.01	0.01
Light Duty Truck (Diesel)	373,038	1,641	135.3	0.06	0.18	0.54	0.02	0.02	0.01
Passenger Cars (Gasoline)	58,240	400	10.6	-0.01	-0.01	-0.02	0.00	0.00	0.00
Total Haul:	**535,943**	**2,496**	**-392.2**	**-1.26**	**-41.86**	**3.84**	**-0.42**	**-0.40**	**-0.03**
Total Worker:	**58,240**	**400**	**10.6**	**-0.01**	**-0.01**	**-0.02**	**0.00**	**0.00**	**0.00**
Total Overall:	**594,183**	**2,896**	**-381.5**	**-1.28**	**-41.87**	**3.82**	**-0.42**	**-0.40**	**-0.03**

GHG Emissions from Diverted Throughput (i.e GHG Emissions that would Occur Without Project)
From CARB "Waste Diversion GHG Emission Reduction Calculator for FY 2015-16 (.xlsx)"

Avoided Emissions from Composting in Windrows, CASP and Anaerobic Digester

Compost Worksheet

Year	Feedstock Diverted for Windrow Composting (Short Tons)	Feedstock Diverted for ASP System Composting (Short Tons)	Composition of Feedstock (% Food Waste)	Composition of Feedstock (% Green Waste)	Residual Material Sent to Landfill (Short Tons)	Net Tons of Material Diverted (Short Tons)	Net GHG Benefit (MTCO2e)
2016	180,000	75,000	22%	78%	0	255,000	48,891

Standalone Anaerobic Digestion (AD) Worksheet

Year	Feedstock Diverted for Anaerobic Digestion Producing Vehicle Fuel & Digestate that is Landfilled (Short Tons)	Feedstock Diverted for Anaerobic Digestion Producing Vehicle Fuel & Digestate that is Composted (Short Tons)	Feedstock Diverted for Anaerobic Digestion Producing Electricity & Digestate is Landfilled (Short Tons)	Feedstock Diverted for Anaerobic Digestion Producing Electricity & Digestate is Composted (Short Tons)	Feedstock Diverted for Anaerobic Digestion to Inject into Pipeline & Digestate is Landfilled (Short Tons)	Feedstock Diverted for Anaerobic Digestion to Inject into Pipeline & Digestate is Composted (Short Tons)	Residual Material Sent to Landfill (Short Tons)	Net Tons of Material Diverted (Short Tons)	Net GHG Benefit (MTCO2e)
2016	0	0	0	40,000	0	0	0	40,000	10,000

295,000	**Total material diverted from landfill (short tons)**
58,891	**Total Estimated GHG Emission Reductions per year ($MTCO_2e$)**

ALTERNATE METHOD

CARB "Method for Estimating Greenhouse Gas Emission Reductions from Diversion of Organic Waste from Landfills to Compost Facilities", March 2016

Final Compost Emission Reduction Factor

The CERF is determined by subtracting the composting emissions from the composting emission reductions for each waste type. The results are included in Table 11.

Table 11. CERF values by waste type.

Waste Type	Composting Benefits (Btotal)	Composting Emissions	Final CERF (MT CO2e/ ton waste input)
Food Waste	0.69	0.07	0.62
Yard Trimmings	0.51	0.07	0.44
Mixed Organics	0.63	0.07	0.56

This leads to a CERF of **0.44 – 0.62 MTCO2E/ton of feedstock.**

49,863	Quantity of food diverted from landfill (tons)
131,275	Quantity of green diverted from landfill (tons)
181,138	Total quantity of compostable diverted (tons)
88,676	Net benefit MTCO2e per year
101,437	Net benefit MTCO2e per year using Mixed Organics CERF

Avoided LF Flare Emissions

Material will be diverted from Toland Landill to the Project. Toland Landfill utilizes a flare to control volatile emissions, so this spreadsheet calculates flaring emissions avoided by the Project. These emissions are then included in the Project Baseline for the significance determination in this AQCCIA.

Quantity of Gas Diverted from Toland Road (based on Landgem model for 2018)

5.15E+07	m3/year total landfill gas
25,760,000	m3/year methane
1,819,411,798	ft3/year total landfill gas
909,705,899	ft3/year methane

Toland Road Flare Emission Factors (VCAPCD Emissions Factors for Toland Road Landfill, 1/24/17)

Units	ROC	NOx	PM	CO
lb/MMBTU	0.010	0.060	0.020	0.200
lb/MMcf landfill gas	5.0	30.0	10.0	100.0
lb/MMcf CH_4	10.5	63	21	210

Emissions

Parameter	ROC	NOx	PM10	PM2.5	CO
EF (lb/10^6 dscf $CH_{4)}$	11	63	21	21	210
Throughput (10^6 dscf CH_4/year)	910	910	910	910	910
Emissions (lb/year)	9,552	57,311	19,104	19,104	191,038
Emissions (ton/year)	4.8	28.7	9.6	9.6	95.5
Emissions (lb/day)	26.2	157.0	52.3	52.3	523.4

Conversions:

50.0%	% methane in landfill gas
500	Btu/scf for landfill gas (VCAPCD assumption)
1050	Btu/scf for CH_4
35.31467	ft3/m3

APPENDIX D

TAC EMISSIONS CALCULATIONS AND MODELING ASSUMPTIONS

Peak Year Emissions (lb/yr)

Source	DPM	ETHYL BENZENE	STYRENE	1,3-BUT ADIENE	ACROLEIN	XYLENES	TOLUENE	N-HEXANE	PROPION ALDEHYDE	MTBE	FORM ALDEHYDE	2,2,4-TRIME THYLPENTANE	METHANOL	BENZENE
Offroad Source (Source 1)														
Off Road Diesel	-157													
Fugitive Organics (Source 3)														
Windrow/CASP/AD Organics		4.03E+01	7.44E+01			2.60E+02					1.35E+03		161,401	
AD Source (Source 2)														
AD CHP Engines		2.7E-01				5.4E-01	1.1E+00	5.4E-01			2.2E+01			3.0E+00
AD Flare		6.6E-03				1.3E-02	2.7E-02	1.3E-02			5.4E-01			7.3E-02
Total:		2.8E-01				5.5E-01	1.1E+00	5.5E-01			2.2E+01			3.0E+00
Road Source (Source 4)														
On Road Various	9.66	4.6E-02	5.4E-03	2.3E-02	5.8E-03	3.6E-01	2.5E-01	6.7E-02	1.7E-03	8.2E-02	1.4E-01	7.3E-02	3.4E-02	1.2E-01

Source	ACETALD EHYDE	MEK	NAPHTHA LENE	(1-METHYL ETHYL) BENZENE	propylene	Ammonia	Arsenic	Chlorine	Copper	Mercury	Nickel	Vanadium	Isopropyl alcohol	Dichloro Benzene
Offroad Source (Source 1)														
Off Road Diesel														
Fugitive Organics (Source 3)														
Windrow/CASP/AD Organics	992					93,292							62,782	2.7E+02
AD Source (Source 2)														
AD CHP Engines	8.1E-01				4.6E+01									
AD Flare	2.0E-02				1.1E+00									
Total:	8.3E-01				4.7E+01									
Road Source (Source 4)														
On Road Various	1.3E-02	8.3E-04	2.1E-03	8.3E-04	1.4E-01									

Peak Hour Emissions (lb/h)

Source	DPM	ETHYL BENZENE	STYRENE	1,3-BUT ADIENE	ACROLEIN	XYLENES	TOLUENE	N-HEXANE	PROPION ALDEHYDE	MTBE	FORM ALDEHYDE	2,2,4-TRIME THYLPENTANE	METHANOL	BENZENE
Offroad Source (Source 1)														
Off Road Diesel			4.0E-06		1.8E-06	7.2E-05	1.0E-04				1.0E-03		2.1E-06	1.4E-04
Fugitive Organics (Source 3)														
Windrow/CASP/AD Organics		5.39E-03	9.9E-03			3.5E-02					1.8E-01		2.2E+01	
AD Source (Source 2)														
AD CHP Engines		4.6E-05				9.2E-05	1.8E-04	9.2E-05			3.7E-03			5.1E-04
AD Flare		1.1E-06				2.3E-06	4.5E-06	2.3E-06			9.2E-05			1.2E-05
Total:		4.7E-05				9.5E-05	1.9E-04	9.5E-05			3.8E-03			5.2E-04
Road Source (Source 4)														
On Road Various		1.8E-05	2.1E-05	9.1E-06	1.1E-05	4.8E-04	5.7E-04	2.6E-05	6.5E-07	3.2E-05	4.8E-03	2.9E-05	2.3E-05	6.6E-04

Source	ACETALD EHYDE	MEK	NAPHTHA LENE	(1-METHYL ETHYL) BENZENE	propylene	Ammonia	Arsenic	Chlorine	Copper	Mercury	Nickel	Vanadium	Isopropyl alcohol	Dichloro Benzene
Offroad Source (Source 1)														
Off Road Diesel		1.0E-04				-2.7E-04	-4.0E-07	-2.8E-05	-2.0E-06	-2.4E-06	-1.5E-06	-2.3E-06		
Fugitive Organics (Source 3)														
Windrow/CASP/AD Organics	1.3E-01					1.2E+01							8.4E+00	3.6E-02
AD Source (Source 2)														
AD CHP Engines	1.4E-04				7.8E-03									
AD Flare	3.4E-06				1.9E-04									
Total:	1.4E-04				8.0E-03									
Road Source (Source 4)														
On Road Various	5.1E-06	4.7E-04	8.1E-07	3.3E-07	5.7E-05	1.3E-05	1.9E-08	1.3E-06	9.7E-08	1.2E-07	7.4E-08	1.1E-07		

Biogas TAC Emissions

Emissions Factor

Parameter	propylene	hexane	formaldehyde	acetaldehyde	xylenes (mixed)	benzene	toluene	ethyl benzene
% of ROC	1.69%	0.02%	0.81%	0.03%	0.02%	0.11%	0.04%	0.01%

% of ROC emissions based on CARB's CATEF database for natural gas burned in ICE reciprocating engines (#719).

Baseline Emissions

Source not present in baseline

Post-Project Emissions

Parameter	ROC Emissions (lbs/hr,	Emissions							
		propylene	hexane	formaldehyde	acetaldehyde	xylenes (mixed)	benzene	toluene	ethyl benzene
Hourly (lbs/hr)									
AD CHP Engines	0.461	7.8E-03	9.2E-05	3.7E-03	1.4E-04	9.2E-05	5.1E-04	1.8E-04	4.6E-05
AD Flare	0.011	1.9E-04	2.3E-06	9.2E-05	3.4E-06	2.3E-06	1.2E-05	4.5E-06	1.1E-06
Yearly (lbs/yr)									
AD CHP Engines	2,695	45.54	0.54	21.83	0.81	0.54	2.96	1.08	0.27
AD Flare	66.3	1.12	0.01	0.54	0.02	0.01	0.07	0.03	0.01

Project Increment Emissions

Parameter	ROC Emissions (lbs/hr,	Emissions							
		propylene	hexane	formaldehyde	acetaldehyde	xylenes (mixed)	benzene	toluene	ethyl benzene
Hourly (lbs/hr)									
AD CHP Engines	0.461	7.8E-03	9.2E-05	3.7E-03	1.4E-04	9.2E-05	5.1E-04	1.8E-04	4.6E-05
AD Flare	0.011	1.9E-04	2.3E-06	9.2E-05	3.4E-06	2.3E-06	1.2E-05	4.5E-06	1.1E-06
Yearly (lbs/yr)									
AD CHP Engines	2,695	45.54	0.54	21.83	0.81	0.54	2.96	1.08	0.27
AD Flare	66.3	1.12	0.01	0.54	0.02	0.01	0.07	0.03	0.01

Onsite Equipment TAC Emissions

TAC Emissions Factors

ROC Based Components	Benzene	Toluene	Xylenes	Formaldehyde	Acrolein	Methanol	MEK	Styrene
Fraction of ROC EF:	2.0E-02	1.5E-02	1.0E-02	1.5E-01	2.6E-04	3.0E-04	1.5E-02	5.8E-04

DPM Based Components	Ammonia	Arsenic	Chlorine	Copper	Mercury	Nickel	Vanadium
Fraction of DPM EF:	3.4E-03	5.0E-06	3.4E-04	2.5E-05	3.0E-05	1.9E-05	2.9E-05

Baseline TAC Emissions

Parameter	DPM			ROC	
	lb/day	lb/year	lb/hr	lb/day	lb/hr
Off Road Engine Exhaust	1.81	564	0.15	3.24	0.27

Source	Yearly Emissions	Hourly Emissions (lbs/hr)																
	DPM (lbs/year)	DPM (lb/hr)	ROC (lbs/hr)	Benzene	Toluene	Xylenes	Formaldehyde	Acrolein	Methanol	MEK	Styrene	Ammonia	Arsenic	Chlorine	Copper	Mercury	Nickel	Vanadium
Off Road Engine Exhaust	564.4	1.5E-01	2.7E-01	5.4E-03	4.0E-03	2.8E-03	4.0E-02	7.1E-05	8.1E-05	4.0E-03	1.6E-04	5.1E-04	7.5E-07	5.2E-05	3.8E-06	4.5E-06	2.9E-06	4.4E-06

Post-Project Emissions

Source	Yearly Emissions	Hourly Emissions (lbs/hr)																
	DPM (lbs/year)	DPM (lb/hr)	ROC (lbs/hr)	Benzene	Toluene	Xylenes	Formaldehyde	Acrolein	Methanol	MEK	Styrene	Ammonia	Arsenic	Chlorine	Copper	Mercury	Nickel	Vanadium
Off Road Engine Exhaust	407.9	7.0E-02	2.8E-01	5.5E-03	4.1E-03	2.9E-03	4.1E-02	7.3E-05	8.3E-05	4.1E-03	1.6E-04	2.4E-04	3.5E-07	2.4E-05	1.7E-06	2.1E-06	1.3E-06	2.0E-06

Project Increment Emissions

Source	Yearly Emissions	Hourly Emissions (lbs/hr)																
	DPM (lbs/year)	DPM (lb/hr)	ROC (lbs/hr)	Benzene	Toluene	Xylenes	Formaldehyde	Acrolein	Methanol	MEK	Styrene	Ammonia	Arsenic	Chlorine	Copper	Mercury	Nickel	Vanadium
Off Road Engine Exhaust	-156.5	-8.1E-02	6.9E-03	1.4E-04	1.0E-04	7.2E-05	1.0E-03	1.8E-06	2.1E-06	1.0E-04	4.0E-06	-2.7E-04	-4.0E-07	-2.8E-05	-2.0E-06	-2.4E-06	-1.5E-06	-2.3E-06

Hours/day = 12
Days/Year (Baseline) = 312

Modeled Road Length (Onsite) = 0.24 miles/round trip Hours/Day = 10
Modeled Road Length (Offsite) = 6.2 miles/round trip
Modeled Road Length (Total) = 6.44 miles/round trip

TAC Emissions Factors

Diesel Speciation (Acute Risk Assessment Only)

ROC Based Components	Benzene	Toluene	Xylenes	Formaldehyde	Acrolein	Methanol	MEK	Styrene
% of ROC EF:	2.00%	1.47%	1.04%	14.71%	0.03%	0.03%	1.48%	0.06%

DPM Based Components	Ammonia	Arsenic	Chlorine	Copper	Mercury	Nickel	Vanadium
% of DPM EF:	0.337%	0.001%	0.034%	0.003%	0.003%	0.002%	0.003%

Note: ROC fractions calculated from emission factors from CARB diesel speciation for diesel fueled farm equipment except acrolein, which is from AP42 Section 3-3. DPM speciation also from CARB for diesel fueled automobiles.

CNG ROC Speciation

ROC Based Components	propylene	hexane	formaldehyde	acetaldehyde	xylenes (mixed)	benzene	toluene	ethyl benzene
% of ROC EF:	1.69%	0.02%	0.81%	0.03%	0.02%	0.11%	0.04%	0.01%

CARB Speciation organics profile 719 - ICE-reciprocating-natural gas

Gasoline ROC Speciation

ROC Based Components	ETHYLBENZENE	STYRENE	1,3-BUTADIENE	ACROLEIN	XYLENES	TOLUENE	N-HEXANE	PROPIONALDEHYDE	MTBE	FORMALDEHYDE	2,2,4-TRIMETHYLPENTANE	METHANOL	BENZENE	ACETALDEHYDE	MEK	NAPHTHALENE	(1-METHYLETHYL) BENZENE
% of ROC EF:	1.09%	0.13%	0.56%	0.14%	8.70%	5.99%	1.61%	0.04%	1.97%	1.73%	1.75%	0.83%	2.68%	0.25%	0.02%	0.05%	0.02%

CARB Speciation organics profile 438 - Gasoline - catalyst - stabilized exhaust - ARB IUS summer 1999 as referenced by "PREPARATION OF EMISSIONINVENTORIES OF TOXIC AIRCONTAMINANTS FOR THE BAY AREA"

Baseline TAC Emissions

		VMT Calculation					DPM Emissions			ROC Emissions		
Vehicle	Fuel Type	Vehicles per year	VMT/year	Days / Year	VMT / Day	VMT / hr	EF (g/VMT)	(lb/yr)	(lb/hr)	EF (g/VMT)	(lb/yr)	(lb/hr)
HHD Solid Waste Collection Truck	Diesel	2,098	13,509	312	43	4.3	0.017	0.50	1.6E-04	0.394	---	3.8E-03
HHD Solid Waste Collection Truck	CNG	1,398	9,006	312	29	2.9	---	---	---	0.125	2.48	7.9E-04
HHD Fleet Truck from MRFs	Diesel	1,547	9,963	312	32	3.2	0.090	1.98	6.3E-04	0.232	---	1.6E-03
Light Duty Truck - Business/Self Haul (Diesel Half)	Diesel	1,246	8,021	312	26	2.6	0.007	0.12	3.7E-05	0.019	---	1.1E-04
Light Duty Truck - Business/Self Haul (Gas Half)	Gasoline	1,246	8,021	312	26	2.6	---	---	---	0.030	0.53	1.7E-04
HHD Fleet - Roll off	Diesel	772	4,972	260	19	1.9	0.090	0.99	3.8E-04	0.232	---	9.8E-04
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	Diesel	0	0	260	0	0.0	0.090	0.00	0.0E+00	0.232	---	0
HHD Fleet Truck - Finished Compost, Mulch, etc.	Diesel	1,580	10,176	260	39	3.9	0.090	2.02	7.8E-04	0.232	---	2.0E-03
Light Duty Truck (Diesel Half)	Diesel	786	5,063	260	19	1.9	0.007	0.07	2.8E-05	0.019	---	8.0E-05
Light Duty Truck (Gas Half)	Gasoline	786	5,063	260	19	1.9	---	---	---	0.030	0.33	1.3E-04

Pounds per Year

Vehicle	Fuel Type	DPM (lb/yr)	ETHYLBENZENE	STYRENE	1,3-BUTADIENE	ACROLEIN	XYLENES	TOLUENE	N-HEXANE	PROPIONALDEHYDE	MTBE	FORMALDEHYDE	2,2,4-TRIMETHYLPENTANE	METHANOL	BENZENE	ACETALDEHYDE	MEK	NAPHTHALENE	(1-METHYLETHYL) BENZENE	propylene
HHD Solid Waste Collection Truck	Diesel	0.50																		
HHD Solid Waste Collection Truck	CNG		2.5E-04				5.0E-04	9.9E-04	5.0E-04			2.0E-02			2.7E-03	7.4E-04				4.2E-02
HHD Fleet Truck from MRFs	Diesel	1.98																		
Light Duty Truck - Business/Self Haul (Diesel Half)	Diesel	0.12																		
Light Duty Truck - Business/Self Haul (Gas Half)	Gasoline		5.7E-03	6.8E-04	2.9E-03	7.4E-04	4.6E-02	3.1E-02	8.5E-03	2.1E-04	1.0E-02	9.1E-03	9.2E-03	4.4E-03	1.4E-02	1.3E-03	1.1E-04	2.6E-04	1.1E-04	
HHD Fleet - Roll off	Diesel	0.99																		
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	Diesel	0.00																		
HHD Fleet Truck - Finished Compost, Mulch, etc.	Diesel	2.02																		
Light Duty Truck (Diesel Half)	Diesel	0.07																		
Light Duty Truck (Gas Half)	Gasoline		3.6E-03	4.3E-04	1.9E-03	4.6E-04	2.9E-02	2.0E-02	5.3E-03	1.3E-04	6.5E-03	5.7E-03	5.8E-03	2.8E-03	8.9E-03	8.3E-04	6.6E-05	1.7E-04	6.6E-05	
	Total:	**5.68**	**9.6E-03**	**1.1E-03**	**4.8E-03**	**1.2E-03**	**7.5E-02**	**5.2E-02**	**1.4E-02**	**3.4E-04**	**1.7E-02**	**3.5E-02**	**1.5E-02**	**7.1E-03**	**2.6E-02**	**2.9E-03**	**1.7E-04**	**4.3E-04**	**1.7E-04**	**4.2E-02**

Pounds per Hour

Vehicle	Fuel Type	ETHYLBENZENE	STYRENE	1,3-BUTADIENE	ACROLEIN	XYLENES	TOLUENE	N-HEXANE	PROPIONALDEHYDE	MTBE	FORMALDEHYDE	2,2,4-TRIMETHYLPENTANE	METHANOL	BENZENE	ACETALDEHYDE	MEK	NAPHTHALENE	(1-METHYLETHYL) BENZENE	propylene	Ammonia	Arsenic	Chlorine	Copper	Mercury	Nickel	Vanadium
HHD Solid Waste Collection Truck	Diesel		2.2E-06		9.9E-07	3.9E-05	5.5E-05				5.5E-04		1.1E-06	7.5E-05		5.5E-05				5.4E-07	8.0E-10	5.5E-08	4.0E-09	4.8E-09	3.0E-09	4.6E-09
HHD Solid Waste Collection Truck	CNG	7.9E-08				1.6E-07	3.2E-07	1.6E-07			6.4E-06			8.7E-07	2.4E-07				1.3E-05							
HHD Fleet Truck from MRFs	Diesel		9.5E-07		4.3E-07	1.7E-05	2.4E-05				2.4E-04		4.9E-07	3.3E-05		2.4E-05				2.1E-06	3.2E-09	2.2E-07	1.6E-08	1.9E-08	1.2E-08	1.8E-08
Light Duty Truck - Business/Self Haul (Diesel Half)	Diesel		6.1E-08		2.8E-08	1.1E-06	1.5E-06				1.5E-05		3.2E-08	2.1E-06		1.6E-06				1.3E-07	1.9E-10	1.3E-08	9.4E-10	1.1E-09	7.1E-10	1.1E-09
Light Duty Truck - Business/Self Haul (Gas Half)	Gasoline	1.8E-06	2.2E-07	9.4E-07	2.4E-07	1.5E-05	1.0E-05	2.7E-06	6.7E-08	3.3E-06	2.9E-06	2.9E-06	1.4E-06	4.5E-06	4.2E-07	3.4E-08	8.4E-08	3.4E-08								
HHD Fleet - Roll off	Diesel		5.7E-07		2.6E-07	1.0E-05	1.4E-05				1.4E-04		2.9E-07	2.0E-05		1.4E-05				1.3E-06	1.9E-09	1.3E-07	9.5E-09	1.1E-08	7.2E-09	1.1E-08
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	Diesel		0		0	0	0				0		0	0		0				0	0	0	0	0	0	0
HHD Fleet Truck - Finished Compost, Mulch, etc.	Diesel		1.2E-06		5.3E-07	2.1E-05	2.9E-05				2.9E-04		6.0E-07	4.0E-05		3.0E-05				2.6E-06	3.9E-09	2.7E-07	1.9E-08	2.3E-08	1.5E-08	2.3E-08
Light Duty Truck (Diesel Half)	Diesel		4.6E-08		2.1E-08	8.3E-07	1.2E-06				1.2E-05		2.4E-08	1.6E-06		1.2E-06				9.6E-08	1.4E-10	9.8E-09	7.1E-10	8.5E-10	5.4E-10	8.2E-10
Light Duty Truck (Gas Half)	Gasoline	1.4E-06	1.7E-07	7.1E-07	1.8E-07	1.1E-05	7.6E-06	2.1E-06	5.1E-08	2.5E-06	2.2E-06	2.2E-06	1.1E-06	3.4E-06	3.2E-07	2.5E-08	6.4E-08	2.5E-08								
	Total:	**3.3E-06**	**5.3E-06**	**1.7E-06**	**2.7E-06**	**1.1E-04**	**1.4E-04**	**4.9E-06**	**1.2E-07**	**5.8E-06**	**1.3E-03**	**5.2E-06**	**5.0E-06**	**1.8E-04**	**9.8E-07**	**1.3E-04**	**1.5E-07**	**5.9E-08**	**1.3E-05**	**6.8E-06**	**1.0E-08**	**6.9E-07**	**5.0E-08**	**6.1E-08**	**3.8E-08**	**5.9E-08**

Project TAC Emissions

		VMT Calculation					DPM Emissions			ROC Emissions		
Vehicle	**Fuel Type**	**Vehicles per year**	**VMT/year**	**Days / Year**	**VMT / Day**	**VMT / hr**	**EF (g/VMT)**	**(lb/yr)**	**(lb/hr)**	**EF (g/VMT)**	**(lb/yr)**	**(lb/hr)**
HHD Solid Waste Collection Truck	Diesel	11,400	73,416	260	282	28.2	0.013	2.15	8.3E-04	0.316	---	2.0E-02
HHD Solid Waste Collection Truck	CNG	7,600	48,944	260	188	18.8	---	---	---	0.100	10.82	4.2E-03
HHD Fleet Truck from MRFs	Diesel	6,225	40,091	260	154	15.4	0.032	2.86	1.1E-03	0.137	---	4.7E-03
Light Duty Truck - Business/Self Haul (Diesel Half)	Diesel	16,079	103,551	260	398	39.8	0.006	1.26	4.9E-04	0.018	---	1.5E-03
Light Duty Truck - Business/Self Haul (Gas Half)	Gasoline	16,079	103,551	260	398	39.8	---	---	---	0.018	4.18	1.6E-03
HHD Fleet - Roll off	Diesel	1,439	9,270	260	36	3.6	0.032	0.66	2.5E-04	0.137	---	1.1E-03
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	Diesel	1,788	11,513	260	44	4.4	0.032	0.82	3.2E-04	0.137	---	0.00134
HHD Fleet Truck - Finished Compost, Mulch, etc.	Diesel	15,960	102,784	260	395	39.5	0.032	7.33	2.8E-03	0.137	---	1.2E-02
Light Duty Truck (Diesel Half)	Diesel	3,183	20,496	260	79	7.9	0.006	0.25	9.6E-05	0.018	---	3.0E-04
Light Duty Truck (Gas Half)	Gasoline	3,183	20,496	260	79	7.9	---	---	---	0.018	0.83	3.2E-04

Pounds per Year

Vehicle	**Fuel Type**	**DPM (lb/yr)**	**ETHYLBENZENE**	**STYRENE**	**1,3-BUTADIENE**	**ACROLEIN**	**XYLENES**	**TOLUENE**	**N-HEXANE**	**PROPIONALDEHYDE**	**MTBE**	**FORMALDEHYDE**	**2,2,4-TRIMETHYLPENTANE**	**METHANOL**	**BENZENE**	**ACETALDEHYDE**	**MEK**	**NAPHTHALENE**	**(1-METHYLETHYL) BENZENE**	**propylene**
HHD Solid Waste Collection Truck	Diesel	2.15																		
HHD Solid Waste Collection Truck	CNG		1.1E-03				2.2E-03	4.3E-03	2.2E-03			8.8E-02			1.2E-02	3.2E-03				1.8E-01
HHD Fleet Truck from MRFs	Diesel	2.86																		
Light Duty Truck - Business/Self Haul (Diesel Half)	Diesel	1.26																		
Light Duty Truck - Business/Self Haul (Gas Half)	Gasoline		4.6E-02	5.4E-03	2.3E-02	5.8E-03	3.6E-01	2.5E-01	6.7E-02	1.7E-03	8.2E-02	7.2E-02	7.3E-02	3.5E-02	1.1E-01	1.0E-02	8.4E-04	2.1E-03	8.4E-04	
HHD Fleet - Roll off	Diesel	0.66																		
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	Diesel	0.82																		
HHD Fleet Truck - Finished Compost, Mulch, etc.	Diesel	7.33																		
Light Duty Truck (Diesel Half)	Diesel	0.25																		
Light Duty Truck (Gas Half)	Gasoline		9.0E-03	1.1E-03	4.6E-03	1.2E-03	7.2E-02	5.0E-02	1.3E-02	3.3E-04	1.6E-02	1.4E-02	1.4E-02	6.9E-03	2.2E-02	2.1E-03	1.7E-04	4.1E-04	1.7E-04	
	Total:	**15.34**	**5.6E-02**	**6.5E-03**	**2.8E-02**	**7.0E-03**	**4.4E-01**	**3.0E-01**	**8.3E-02**	**2.0E-03**	**9.9E-02**	**1.7E-01**	**8.8E-02**	**4.2E-02**	**1.5E-01**	**1.6E-02**	**1.0E-03**	**2.5E-03**	**1.0E-03**	**1.8E-01**

Pounds per Hour

Vehicle	**Fuel Type**	**ETHYLBENZENE**	**STYRENE**	**1,3-BUTADIENE**	**ACROLEIN**	**XYLENES**	**TOLUENE**	**N-HEXANE**	**PROPIONALDEHYDE**	**MTBE**	**FORMALDEHYDE**	**2,2,4-TRIMETHYLPENTANE**	**METHANOL**	**BENZENE**	**ACETALDEHYDE**	**MEK**	**NAPHTHALENE**	**(1-METHYLETHYL) BENZENE**	**propylene**	**Ammonia**	**Arsenic**	**Chlorine**	**Copper**	**Mercury**	**Nickel**	**Vanadium**
HHD Solid Waste Collection Truck	Diesel		1.1E-05		5.2E-06	2.0E-04	2.9E-04				2.9E-03		5.9E-06	3.9E-04		2.9E-04				2.8E-06	4.1E-09	2.8E-07	2.1E-08	2.5E-08	1.6E-08	2.4E-08
HHD Solid Waste Collection Truck	CNG	4.2E-07				8.3E-07	1.7E-06	8.3E-07			3.4E-05			4.6E-06	1.2E-06				7.0E-05							
HHD Fleet Truck from MRFs	Diesel		2.7E-06		1.2E-06	4.9E-05	6.9E-05				6.9E-04		1.4E-06	9.3E-05		6.9E-05				3.7E-06	5.5E-09	3.8E-07	2.8E-08	3.3E-08	2.1E-08	3.2E-08
Light Duty Truck - Business/Self Haul (Diesel Half)	Diesel		8.9E-07		4.1E-07	1.6E-05	2.3E-05				2.3E-04		4.6E-07	3.1E-05		2.3E-05				1.6E-06	2.4E-09	1.7E-07	1.2E-08	1.5E-08	9.2E-09	1.4E-08
Light Duty Truck - Business/Self Haul (Gas Half)	Gasoline	1.8E-05	2.1E-06	9.0E-06	2.2E-06	1.4E-04	9.6E-05	2.6E-05	6.4E-07	3.2E-05	2.8E-05	2.8E-05	1.3E-05	4.3E-05	4.0E-06	3.2E-07	8.0E-07	3.2E-07								
HHD Fleet - Roll off	Diesel		6.3E-07		2.9E-07	1.1E-05	1.6E-05				1.6E-04		3.2E-07	2.2E-05		1.6E-05				8.6E-07	1.3E-09	8.8E-08	6.4E-09	7.6E-09	4.8E-09	7.4E-09
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	Diesel		7.8E-07		3.5E-07	1.4E-05	2.0E-05				2.0E-04		4.0E-07	0.0E+00		2.0E-05				1.1E-06	1.6E-09	1.1E-07	7.9E-09	9.5E-09	6.0E-09	9.2E-09
HHD Fleet Truck - Finished Compost, Mulch, etc.	Diesel		6.9E-06		3.2E-06	1.2E-04	1.8E-04				1.8E-03		3.6E-06	2.4E-04		1.8E-04				9.5E-06	1.4E-08	9.7E-07	7.1E-08	8.5E-08	5.4E-08	8.2E-08
Light Duty Truck (Diesel Half)	Diesel		1.8E-07		8.0E-08	3.2E-06	4.5E-06				4.5E-05		9.1E-08	6.1E-06		4.5E-06				3.2E-07	4.8E-10	3.3E-08	2.4E-09	2.9E-09	1.8E-09	2.8E-09
Light Duty Truck (Gas Half)	Gasoline	3.5E-06	4.1E-07	1.8E-06	4.5E-07	2.8E-05	1.9E-05	5.1E-06	1.3E-07	6.3E-06	5.5E-06	5.6E-06	2.6E-06	8.5E-06	8.0E-07	6.4E-08	1.6E-07	6.4E-08								
	Total:	**2.1E-05**	**2.6E-05**	**1.1E-05**	**1.3E-05**	**5.9E-04**	**7.1E-04**	**3.2E-05**	**7.7E-07**	**3.8E-05**	**6.0E-03**	**3.4E-05**	**2.8E-05**	**8.4E-04**	**6.1E-06**	**6.0E-04**	**9.6E-07**	**3.9E-07**	**7.0E-05**	**2.0E-05**	**2.9E-08**	**2.0E-06**	**1.5E-07**	**1.8E-07**	**1.1E-07**	**1.7E-07**

Project Increment TAC Emissions

Pounds per Year

Vehicle	**Fuel Type**	**DPM (lb/yr)**	**ETHYLBENZENE**	**STYRENE**	**1,3-BUTADIENE**	**ACROLEIN**	**XYLENES**	**TOLUENE**	**N-HEXANE**	**PROPIONALDEHYDE**	**MTBE**	**FORMALDEHYDE**	**2,2,4-TRIMETHYLPENTANE**	**METHANOL**	**BENZENE**	**ACETALDEHYDE**	**MEK**	**NAPHTHALENE**	**(1-METHYLETHYL) BENZENE**	**propylene**
HHD Solid Waste Collection Truck	Diesel	1.65																		
HHD Solid Waste Collection Truck	CNG		8.3E-04				1.7E-03	3.3E-03				6.8E-02			9.2E-03	2.5E-03				1.4E-01
HHD Fleet Truck from MRFs	Diesel	0.88																		
Light Duty Truck - Business/Self Haul (Diesel Half)	Diesel	1.15																		
Light Duty Truck - Business/Self Haul (Gas Half)	Gasoline		4.0E-02	4.7E-03	2.0E-02	5.1E-03	3.2E-01	2.2E-01	5.9E-02	1.5E-03	7.2E-02	6.3E-02	6.4E-02	3.0E-02	9.8E-02	9.1E-03	7.3E-04	1.8E-03	7.3E-04	
HHD Fleet - Roll off	Diesel	-0.33																		
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	Diesel	0.82																		
HHD Fleet Truck - Finished Compost, Mulch, etc.	Diesel	5.31																		
Light Duty Truck (Diesel Half)	Diesel	0.18																		
Light Duty Truck (Gas Half)	Gasoline		5.4E-03	6.4E-04	2.8E-03	6.9E-04	4.3E-02	3.0E-02	8.0E-03	2.0E-04	9.8E-03	8.6E-03	8.7E-03	4.1E-03	1.3E-02	1.2E-03	9.9E-05	2.5E-04	9.9E-05	
	Total:	**9.66**	**4.6E-02**	**5.4E-03**	**2.3E-02**	**5.8E-03**	**3.6E-01**	**2.5E-01**	**6.7E-02**	**1.7E-03**	**8.2E-02**	**1.4E-01**	**7.3E-02**	**3.4E-02**	**1.2E-01**	**1.3E-02**	**8.3E-04**	**2.1E-03**	**8.3E-04**	**1.4E-01**

Pounds per Hour

Vehicle	**Fuel Type**	**ETHYLBENZENE**	**STYRENE**	**1,3-BUTADIENE**	**ACROLEIN**	**XYLENES**	**TOLUENE**	**N-HEXANE**	**PROPIONALDEHYDE**	**MTBE**	**FORMALDEHYDE**	**2,2,4-TRIMETHYLPENTANE**	**METHANOL**	**BENZENE**	**ACETALDEHYDE**	**MEK**	**NAPHTHALENE**	**(1-METHYLETHYL) BENZENE**	**propylene**	**Ammonia**	**Arsenic**	**Chlorine**	**Copper**	**Mercury**	**Nickel**	**Vanadium**
HHD Solid Waste Collection Truck	Diesel		9.2E-06		4.2E-06	1.7E-04	2.3E-04				2.3E-03		4.8E-06	3.2E-04		2.4E-04				2.2E-06	3.3E-09	2.3E-07	1.7E-08	2.0E-08	1.3E-08	1.9E-08
HHD Solid Waste Collection Truck	CNG	3.4E-07				6.7E-07	1.3E-06				2.7E-05			3.7E-06	1.0E-06				5.7E-05							
HHD Fleet Truck from MRFs	Diesel		1.8E-06		8.0E-07	3.2E-05	4.5E-05				4.5E-04		9.1E-07	6.1E-05		4.5E-05				1.6E-06	2.3E-09	1.6E-07	1.2E-08	1.4E-08	8.9E-09	1.4E-08
Light Duty Truck - Business/Self Haul (Diesel Half)	Diesel		8.3E-07		3.8E-07	1.5E-05	2.1E-05				2.1E-04		4.3E-07	2.9E-05		2.1E-05				1.5E-06	2.2E-09	1.5E-07	1.1E-08	1.3E-08	8.5E-09	1.3E-08
Light Duty Truck - Business/Self Haul (Gas Half)	Gasoline	1.6E-05	1.9E-06	8.1E-06	2.0E-06	1.3E-04	8.6E-05	2.3E-05	5.8E-07	2.8E-05	2.5E-05	2.5E-05	1.2E-05	3.9E-05	3.6E-06	2.9E-07	7.2E-07	2.9E-07								
HHD Fleet - Roll off	Diesel		5.9E-08		2.7E-08	1.1E-06	1.5E-06				1.5E-05		3.0E-08	2.0E-06		1.5E-06				-4.2E-07	-6.3E-10	-4.3E-08	-3.1E-09	-3.8E-09	-2.4E-09	-3.6E-09
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	Diesel		0		0	0	0				0		0	0		0				0	0	0	0	0	0	0
HHD Fleet Truck - Finished Compost, Mulch, etc.	Diesel		5.8E-06		2.6E-06	1.0E-04	1.5E-04				1.5E-03		3.0E-06	2.0E-04		1.5E-04				6.9E-06	1.0E-08	7.0E-07	5.1E-08	6.1E-08	3.9E-08	5.9E-08
Light Duty Truck (Diesel Half)	Diesel		1.3E-07		5.9E-08	2.3E-06	3.3E-06				3.3E-05		6.7E-08	4.5E-06		3.3E-06				2.3E-07	3.4E-10	2.3E-08	1.7E-09	2.0E-09	1.3E-09	2.0E-09
Light Duty Truck (Gas Half)	Gasoline	2.1E-06	2.5E-07	1.1E-06	2.7E-07	1.7E-05	1.1E-05	3.1E-06	7.6E-08	3.8E-06	3.3E-06	3.3E-06	1.6E-06	5.1E-06	4.8E-07	3.8E-08	9.5E-08	3.8E-08								
	Total:	**1.8E-05**	**2.1E-05**	**9.1E-06**	**1.1E-05**	**4.8E-04**	**5.7E-04**	**2.6E-05**	**6.5E-07**	**3.2E-05**	**4.8E-03**	**2.9E-05**	**2.3E-05**	**6.6E-04**	**5.1E-06**	**4.7E-04**	**8.1E-07**	**3.3E-07**	**5.7E-05**	**1.3E-05**	**1.9E-08**	**1.3E-06**	**9.7E-08**	**1.2E-07**	**7.4E-08**	**1.1E-07**

Organic TAC Emissions

Emissions Factors

Parameter	Acetaldehyde	Isopropyl Alcohol	Methanol	Formaldehyde	Xylene	Ethyl Benzene	Styrene	Dichlorobenzene Isomers	Ammonia
Fraction of VOC Ef (lb/lb)	3.20E-03	2.03E-01	5.21E-01	4.35E-03	8.40E-04	1.30E-04	2.40E-04	8.80E-04	---

*Emission factors are derived from the VOC profile 1616, "Green Waste Composting" from *EPA Speciate 4.4* , test data from the 2011 article *Volatile organic compound emissions from green waste composting: Characterization and ozone formation* in the journal, *Atmospheric Environment* ,(45, 2011, 1841-1848).

Ammonia emissions calculated directly as part of criteria pollutant calculations and assume 20% control

Baseline Emissions

Parameter	Throughput (wet ton/yr)	VOC (lbs/ton)	VOC (lbs/year)	VOC (lbs/hr)	NH3 (lbs/ton)	NH3 (lbs/year)	NH3 (lbs/hr)
Stockpiling	58,619	0.2	11,724	1.3	0	0	0.0
Windrow Composting & Cure	58,619	3.58	209,856	24.0	0.624	36,578	4.2
		Total:	**221,580**	**25.3**	**Total:**	**36,578**	**4.2**

Parameter	VOC Emissions	Acetaldehyde	Isopropyl Alcohol	Methanol	Formaldehyde	Xylene	Ethyl Benzene	Styrene	Dichlorobenzene Isomers	NH3
Hourly Emissions (lbs/hr)	25.3	0.08	5.12	13.17	0.11	0.02	0.00	0.01	0.02	4.18
Yearly Emissions (lbs/year)	221,580	709	44,888	115,399	964	186	29	53	195	36,578

Post-Project Total Emissions

Parameter	VOC Emissions	Acetaldehyde	Isopropyl Alcohol	Methanol	Formaldehyde	Xylene	Ethyl Benzene	Styrene	Dichlorobenzene Isomers	NH3
Hourly Emissions (lbs/hr)	66.7	0.21	13.52	34.76	0.29	0.06	0.01	0.02	0.06	16.31
Yearly Emissions (lbs/year)	531,490	1,701	107,669	276,800	2,312	446	69	128	468	129,870

Project Increment Emissions

Parameter	VOC Emissions	Acetaldehyde	Isopropyl Alcohol	Methanol	Formaldehyde	Xylene	Ethyl Benzene	Styrene	Dichlorobenzene Isomers	NH3
Hourly Emissions (lbs/hr)	41.4	0.13	8.40	21.58	0.18	0.03	0.01	0.01	0.04	12.13
Yearly Emissions (lbs/year)	309,910	992	62,782	161,401	1,348	260	40	74	273	93,292

Hours/day = 24
Days/year = 365

AERMOD Input Parameters

Source			Source Parameters	
Name	**ID**	**Source Type**	**Release/Stack Height (m)**	**Initial Vertical Dim. (m)**
Off Road Equipment	PAREA1	Area	5	2.3
Fugitive VOCs	PAREA3	Area	3.05	0.0
Anaerobic Digester	PAREA2	Area	5	2.3
Haul Road	SLINE1	Line (Adj. Vol.)	2.55	2.37

Lakes Version: 9.3.0

Met Data:

File Name:	723927.sfc & 723927.pfl
Date Range:	1/1/2009 to 1/2/2014
Location:	Oxnard Airport

Elevation Data:

Source:	WebGIS
Location:	Saticoy and Santa Paula

Grid Receptors:

Grid Points	x = 130	y = 80
Grid Spacing (m)	50	
Flagpole Ht (m)	1.5	
Onsite Receptors	Disabled	

Boundary Receptors:

Receptor Spacing (m)	25
Flagpole ht (m)	1.5

AERMOD Dispersion Options

Regulatory Default Options	**Yes**	Were regulatory defaults options utilized?	
If no, which non-default options were utilized:		**---**	N/A
		---	N/A
		---	N/A
Averaging Times Utilized	**1-hr**	Acute risk averaging time	
	Period	Chronic/cancer risk averaging time ("period" = met data duration)	
Dispersion Coefficient	**Rural**	Rural or Urban	
Terrain Height Options	**Elevated**	Elevated (default), flat, or flat & elevated	

HARP2 - HRACalc (dated 17023) 5/18/2017 8:53:01 PM - Output Log

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

Receptor Type: Resident
Scenario: Cancer
Calculation Method: Derived

****
EXPOSURE DURATION PARAMETERS FOR CANCER

Start Age: -0.25
Total Exposure Duration: 30

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

****
PATHWAYS ENABLED

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

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

****
INHALATION

Daily breathing rate: RMP

Worker Adjustment Factors
Worker adjustment factors enabled: NO

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

****
SOIL & DERMAL PATHWAY SETTINGS

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

****
HOMEGROWN CROP PATHWAY SETTINGS

Household type: HouseholdsthatGarden
Fraction leafy: 0.137
Fraction exposed: 0.137
Fraction protected: 0.137
Fraction root: 0.137

****
PIG, CHICKEN, & EGG PATHWAY SETTINGS

Surface area (m^2): 0
Volume (kg): 0
Volume changes per year: 0

Pig
Fraction consumed from contaminated water source: 0
Fraction consumed of contaminated leafy crop: 0.25
Fraction consumed of contaminated exposed crop: 0.25
Fraction consumed of contaminated protected crop: 0.25
Fraction consumed of contaminated root crop: 0.25

Chicken
Fraction consumed from contaminated water source: 0
Fraction consumed of contaminated leafy crop: 0.25
Fraction consumed of contaminated exposed crop: 0.25
Fraction consumed of contaminated protected crop: 0.25
Fraction consumed of contaminated root crop: 0.25

Egg
Fraction consumed from contaminated water source: 0

```
Fraction consumed of contaminated leafy crop: 0.25
Fraction consumed of contaminated exposed crop: 0.25
Fraction consumed of contaminated protected crop: 0.25
Fraction consumed of contaminated root crop: 0.25

**********
TIER 2 SETTINGS
Tier2 not used.

**********

Calculating cancer risk
Cancer risk breakdown by pollutant and receptor saved to:
E:\Modeling\Agromin\hra\Cancer ResidentCancerRisk.csv
Cancer risk total by receptor saved to: E:\Modeling\Agromin\hra\Cancer
ResidentCancerRiskSumByRec.csv
HRA ran successfully
```

APPENDIX E

CONSTRUCTION EMISSIONS (CALEEMOD)

Agromin Commercial Organics Processing Op.

Ventura County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Manufacturing	236.99	1000sqft	70.00	236,989.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	31
Climate Zone	8			**Operational Year**	2021
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Construction Model_v5

Land Use - Project Site = 70 acres
Buildings = 236,989 sq. ft.

Construction Phase - Phase durations estimated by client.

Off-road Equipment -

Off-road Equipment - Equipment #'s adjusted to Project scope.

Off-road Equipment - Equipment #'s adjusted to Project scope.

Off-road Equipment - Equipment #'s adjusted to Project scope.

Off-road Equipment - Equipment #'s adjusted to Project scope.

Off-road Equipment - Equipment #'s adjusted to Project scope.

Agromin Commercial Organics Processing Op. - Ventura County, Summer

Trips and VMT - Total haul trip #'s adjusted to Project scope.
Demolition - SP Material Existing Onsite = 8,190 tons (10/19/2016)

Grading - Total Project Site = 70 acres
Ag. Fields (to remove) = 55 acres

Architectural Coating - Interior Buildings = 236,989 sq. ft.
Assume VCAPCD compliant low-VOC paints (75 g/L).

Consumer Products -

Area Coating - Interior = 236,989 sq. ft.
Parking = 53,690 sq. ft.
Assume VCAPCD compliant low-VOC paint (75 g/L).

Energy Use -

Water And Wastewater -

Solid Waste -

Land Use Change - Approx 55 acres of orchard removed.

Sequestration - Approx 100+ new trees planted (Landscape Plan).

Construction Off-road Equipment Mitigation - Assume T3 for all equipment.
Assume water truck = 2 times/day.

Mobile Land Use Mitigation -

Area Mitigation - Assume VCAPCD compliant low-VOC paints utilized (75 g/L).

Energy Mitigation -

Water Mitigation - Assume low-flow for all water fixtures.

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	118,500.00	0.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	355,500.00	236,989.00
tblArchitecturalCoating	ConstArea_Parking	0.00	53,690.00
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	75.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	75.00
tblArchitecturalCoating	EF_Parking	250.00	75.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	250	75

Agromin Commercial Organics Processing Op. - Ventura County, Summer

tblAreaCoating	Area_EF_Nonresidential_Interior	250	75
tblAreaCoating	Area_EF_Parking	250	75
tblAreaCoating	Area_Nonresidential_Exterior	118500	0
tblAreaCoating	Area_Nonresidential_Interior	355500	236989
tblAreaCoating	Area_Parking	0	53690
tblAreaMitigation	UseLowVOCPaintNonresidentialExteriorValue	250	75
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblAreaMitigation	UseLowVOCPaintParkingValue	250	75
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	0
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstructionPhase	NumDays	75.00	21.00
tblConstructionPhase	NumDays	1,110.00	90.00
tblConstructionPhase	NumDays	70.00	14.00
tblConstructionPhase	NumDays	110.00	28.00

tblConstructionPhase	NumDays	75.00	60.00
tblConstructionPhase	NumDays	40.00	21.00
tblGrading	AcresOfGrading	42.00	70.00
tblGrading	AcresOfGrading	0.00	55.00
tblLandUse	LotAcreage	5.44	70.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblProjectCharacteristics	OperationalYear	2018	2021
tblSequestration	NumberOfNewTrees	0.00	100.00
tblTripsAndVMT	HaulingTripNumber	810.00	80.00
tblTripsAndVMT	HaulingTripNumber	0.00	40.00
tblTripsAndVMT	HaulingTripNumber	0.00	80.00
tblTripsAndVMT	HaulingTripNumber	0.00	20.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	48.4628	39.3059	23.4675	0.0450	14.9370	1.7215	16.4301	6.9512	1.5838	8.3250	0.0000	4,455.6178	4,455.6178	1.3744	0.0000	4,489.9770
Maximum	**48.4628**	**39.3059**	**23.4675**	**0.0450**	**14.9370**	**1.7215**	**16.4301**	**6.9512**	**1.5838**	**8.3250**	**0.0000**	**4,455.6178**	**4,455.6178**	**1.3744**	**0.0000**	**4,489.9770**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	48.4628	39.3059	23.4675	0.0450	6.7851	1.7215	8.2781	3.1450	1.5838	4.5188	0.0000	4,455.6178	4,455.6178	1.3744	0.0000	4,489.9770
Maximum	**48.4628**	**39.3059**	**23.4675**	**0.0450**	**6.7851**	**1.7215**	**8.2781**	**3.1450**	**1.5838**	**4.5188**	**0.0000**	**4,455.6178**	**4,455.6178**	**1.3744**	**0.0000**	**4,489.9770**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**54.58**	**0.00**	**49.62**	**54.76**	**0.00**	**45.72**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.3507	2.2000e-004	0.0243	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0519	0.0519	1.4000e-004		0.0553
Energy	0.1468	1.3349	1.1213	8.0100e-003		0.1015	0.1015		0.1015	0.1015		1,601.8241	1,601.8241	0.0307	0.0294	1,611.3430
Mobile	1.4350	5.5306	17.8925	0.0623	5.5949	0.0507	5.6456	1.4943	0.0473	1.5416		6,306.1411	6,306.1411	0.2527		6,312.4592
Total	**6.9325**	**6.8657**	**19.0381**	**0.0704**	**5.5949**	**0.1522**	**5.7472**	**1.4943**	**0.1489**	**1.6431**		**7,908.0171**	**7,908.0171**	**0.2836**	**0.0294**	**7,923.8575**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	4.9715	2.2000e-004	0.0243	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0519	0.0519	1.4000e-004		0.0553
Energy	0.1468	1.3349	1.1213	8.0100e-003		0.1015	0.1015		0.1015	0.1015		1,601.8241	1,601.8241	0.0307	0.0294	1,611.3430
Mobile	1.4350	5.5306	17.8925	0.0623	5.5949	0.0507	5.6456	1.4943	0.0473	1.5416		6,306.1411	6,306.1411	0.2527		6,312.4592
Total	**6.5533**	**6.8657**	**19.0381**	**0.0704**	**5.5949**	**0.1522**	**5.7472**	**1.4943**	**0.1489**	**1.6431**		**7,908.0171**	**7,908.0171**	**0.2836**	**0.0294**	**7,923.8575**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	5.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2019	1/18/2019	5	14	
2	Site Preparation	Site Preparation	1/19/2019	2/18/2019	5	21	
3	Grading	Grading	2/19/2019	3/28/2019	5	28	
4	Building Construction	Building Construction	3/29/2019	8/1/2019	5	90	
5	Paving	Paving	8/2/2019	10/24/2019	5	60	
6	Architectural Coating	Architectural Coating	10/25/2019	11/22/2019	5	21	

Acres of Grading (Site Preparation Phase): 55

Acres of Grading (Grading Phase): 70

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 236,989; Non-Residential Outdoor: 0; Striped Parking Area: 53,690 (Architectural Coating – sqft)

OffRoad Equipment

Agromin Commercial Organics Processing Op. - Ventura County, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	2	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	1	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	2	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	5	13.00	0.00	80.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	4	10.00	0.00	40.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	100.00	39.00	80.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	13.00	0.00	20.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Clean Paved Roads

3.2 Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					12.6746	0.0000	12.6746	1.9194	0.0000	1.9194			0.0000			0.0000
Off-Road	3.2526	33.1011	18.7968	0.0336		1.6656	1.6656		1.5507	1.5507		3,305.7738	3,305.7738	0.9001		3,328.2766
Total	**3.2526**	**33.1011**	**18.7968**	**0.0336**	**12.6746**	**1.6656**	**14.3402**	**1.9194**	**1.5507**	**3.4701**		**3,305.7738**	**3,305.7738**	**0.9001**		**3,328.2766**

3.2 Demolition - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0469	1.6820	0.3456	4.3700e-003	0.0995	8.7900e-003	0.1083	0.0273	8.4100e-003	0.0357		476.7699	476.7699	0.0455		477.9084
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0511	0.0320	0.3942	1.0700e-003	0.1068	7.7000e-004	0.1076	0.0283	7.1000e-004	0.0290		106.5607	106.5607	3.0900e-003		106.6379
Total	**0.0980**	**1.7140**	**0.7397**	**5.4400e-003**	**0.2063**	**9.5600e-003**	**0.2159**	**0.0556**	**9.1200e-003**	**0.0647**		**583.3306**	**583.3306**	**0.0486**		**584.5462**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.7036	0.0000	5.7036	0.8637	0.0000	0.8637			0.0000			0.0000
Off-Road	3.2526	33.1011	18.7968	0.0336		1.6656	1.6656		1.5507	1.5507	0.0000	3,305.7738	3,305.7738	0.9001		3,328.2766
Total	**3.2526**	**33.1011**	**18.7968**	**0.0336**	**5.7036**	**1.6656**	**7.3691**	**0.8637**	**1.5507**	**2.4144**	**0.0000**	**3,305.7738**	**3,305.7738**	**0.9001**		**3,328.2766**

3.2 Demolition - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0469	1.6820	0.3456	4.3700e-003	0.0995	8.7900e-003	0.1083	0.0273	8.4100e-003	0.0357		476.7699	476.7699	0.0455		477.9084
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0511	0.0320	0.3942	1.0700e-003	0.1068	7.7000e-004	0.1076	0.0283	7.1000e-004	0.0290		106.5607	106.5607	3.0900e-003		106.6379
Total	**0.0980**	**1.7140**	**0.7397**	**5.4400e-003**	**0.2063**	**9.5600e-003**	**0.2159**	**0.0556**	**9.1200e-003**	**0.0647**		**583.3306**	**583.3306**	**0.0486**		**584.5462**

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					14.8217	0.0000	14.8217	6.9204	0.0000	6.9204			0.0000			0.0000
Off-Road	2.7348	28.8236	13.1736	0.0233		1.4896	1.4896		1.3704	1.3704		2,305.9407	2,305.9407	0.7296		2,324.1801
Total	**2.7348**	**28.8236**	**13.1736**	**0.0233**	**14.8217**	**1.4896**	**16.3112**	**6.9204**	**1.3704**	**8.2907**		**2,305.9407**	**2,305.9407**	**0.7296**		**2,324.1801**

3.3 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0156	0.5607	0.1152	1.4600e-003	0.0332	2.9300e-003	0.0361	9.0800e-003	2.8000e-003	0.0119		158.9233	158.9233	0.0152		159.3028
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0393	0.0246	0.3032	8.2000e-004	0.0822	5.9000e-004	0.0827	0.0218	5.5000e-004	0.0223		81.9698	81.9698	2.3700e-003		82.0291
Total	**0.0550**	**0.5853**	**0.4184**	**2.2800e-003**	**0.1153**	**3.5200e-003**	**0.1188**	**0.0309**	**3.3500e-003**	**0.0342**		**240.8931**	**240.8931**	**0.0176**		**241.3319**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.6698	0.0000	6.6698	3.1142	0.0000	3.1142			0.0000			0.0000
Off-Road	2.7348	28.8236	13.1736	0.0233		1.4896	1.4896		1.3704	1.3704	0.0000	2,305.9407	2,305.9407	0.7296		2,324.1801
Total	**2.7348**	**28.8236**	**13.1736**	**0.0233**	**6.6698**	**1.4896**	**8.1593**	**3.1142**	**1.3704**	**4.4845**	**0.0000**	**2,305.9407**	**2,305.9407**	**0.7296**		**2,324.1801**

3.3 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0156	0.5607	0.1152	1.4600e-003	0.0332	2.9300e-003	0.0361	9.0800e-003	2.8000e-003	0.0119		158.9233	158.9233	0.0152		159.3028
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0393	0.0246	0.3032	8.2000e-004	0.0822	5.9000e-004	0.0827	0.0218	5.5000e-004	0.0223		81.9698	81.9698	2.3700e-003		82.0291
Total	**0.0550**	**0.5853**	**0.4184**	**2.2800e-003**	**0.1153**	**3.5200e-003**	**0.1188**	**0.0309**	**3.3500e-003**	**0.0342**		**240.8931**	**240.8931**	**0.0176**		**241.3319**

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.4408	39.2690	23.0127	0.0438		1.7206	1.7206		1.5830	1.5830		4,332.6631	4,332.6631	1.3708		4,366.9334
Total	**3.4408**	**39.2690**	**23.0127**	**0.0438**	**8.6733**	**1.7206**	**10.3940**	**3.5965**	**1.5830**	**5.1795**		**4,332.6631**	**4,332.6631**	**1.3708**		**4,366.9334**

3.4 Grading - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0590	0.0369	0.4548	1.2300e-003	0.1232	8.9000e-004	0.1241	0.0327	8.2000e-004	0.0335		122.9547	122.9547	3.5600e-003		123.0437
Total	**0.0590**	**0.0369**	**0.4548**	**1.2300e-003**	**0.1232**	**8.9000e-004**	**0.1241**	**0.0327**	**8.2000e-004**	**0.0335**		**122.9547**	**122.9547**	**3.5600e-003**		**123.0437**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.9030	0.0000	3.9030	1.6184	0.0000	1.6184			0.0000			0.0000
Off-Road	3.4408	39.2690	23.0127	0.0438		1.7206	1.7206		1.5830	1.5830	0.0000	4,332.6631	4,332.6631	1.3708		4,366.9333
Total	**3.4408**	**39.2690**	**23.0127**	**0.0438**	**3.9030**	**1.7206**	**5.6236**	**1.6184**	**1.5830**	**3.2014**	**0.0000**	**4,332.6631**	**4,332.6631**	**1.3708**		**4,366.9333**

3.4 Grading - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0590	0.0369	0.4548	1.2300e-003	0.1232	8.9000e-004	0.1241	0.0327	8.2000e-004	0.0335		122.9547	122.9547	3.5600e-003		123.0437
Total	**0.0590**	**0.0369**	**0.4548**	**1.2300e-003**	**0.1232**	**8.9000e-004**	**0.1241**	**0.0327**	**8.2000e-004**	**0.0335**		**122.9547**	**122.9547**	**3.5600e-003**		**123.0437**

3.5 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9975	17.6053	13.9547	0.0227		1.0427	1.0427		0.9853	0.9853		2,171.1606	2,171.1606	0.4983		2,183.6186
Total	**1.9975**	**17.6053**	**13.9547**	**0.0227**		**1.0427**	**1.0427**		**0.9853**	**0.9853**		**2,171.1606**	**2,171.1606**	**0.4983**		**2,183.6186**

3.5 Building Construction - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.3000e-003	0.2617	0.0538	6.8000e-004	0.0155	1.3700e-003	0.0169	4.2400e-003	1.3100e-003	5.5500e-003		74.1642	74.1642	7.0800e-003		74.3413
Vendor	0.1589	4.6344	1.1933	0.0101	0.2636	0.0375	0.3011	0.0759	0.0359	0.1117		1,086.3660	1,086.3660	0.0913		1,088.6490
Worker	0.3932	0.2459	3.0322	8.2300e-003	0.8215	5.9200e-003	0.8274	0.2179	5.4500e-003	0.2234		819.6979	819.6979	0.0237		820.2912
Total	**0.5593**	**5.1420**	**4.2792**	**0.0190**	**1.1006**	**0.0448**	**1.1453**	**0.2980**	**0.0426**	**0.3406**		**1,980.2281**	**1,980.2281**	**0.1221**		**1,983.2815**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9975	17.6053	13.9547	0.0227		1.0427	1.0427		0.9853	0.9853	0.0000	2,171.1606	2,171.1606	0.4983		2,183.6186
Total	**1.9975**	**17.6053**	**13.9547**	**0.0227**		**1.0427**	**1.0427**		**0.9853**	**0.9853**	**0.0000**	**2,171.1606**	**2,171.1606**	**0.4983**		**2,183.6186**

3.5 Building Construction - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.3000e-003	0.2617	0.0538	6.8000e-004	0.0155	1.3700e-003	0.0169	4.2400e-003	1.3100e-003	5.5500e-003		74.1642	74.1642	7.0800e-003		74.3413
Vendor	0.1589	4.6344	1.1933	0.0101	0.2636	0.0375	0.3011	0.0759	0.0359	0.1117		1,086.3660	1,086.3660	0.0913		1,088.6490
Worker	0.3932	0.2459	3.0322	8.2300e-003	0.8215	5.9200e-003	0.8274	0.2179	5.4500e-003	0.2234		819.6979	819.6979	0.0237		820.2912
Total	**0.5593**	**5.1420**	**4.2792**	**0.0190**	**1.1006**	**0.0448**	**1.1453**	**0.2980**	**0.0426**	**0.3406**		**1,980.2281**	**1,980.2281**	**0.1221**		**1,983.2815**

3.6 Paving - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2415	12.9875	12.1414	0.0187		0.7126	0.7126		0.6556	0.6556		1,853.6832	1,853.6832	0.5865		1,868.3453
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2415**	**12.9875**	**12.1414**	**0.0187**		**0.7126**	**0.7126**		**0.6556**	**0.6556**		**1,853.6832**	**1,853.6832**	**0.5865**		**1,868.3453**

3.6 Paving - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.7400e-003	0.0981	0.0202	2.5000e-004	5.8100e-003	5.1000e-004	6.3200e-003	1.5900e-003	4.9000e-004	2.0800e-003		27.8116	27.8116	2.6600e-003		27.8780
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0511	0.0320	0.3942	1.0700e-003	0.1068	7.7000e-004	0.1076	0.0283	7.1000e-004	0.0290		106.5607	106.5607	3.0900e-003		106.6379
Total	**0.0539**	**0.1301**	**0.4143**	**1.3200e-003**	**0.1126**	**1.2800e-003**	**0.1139**	**0.0299**	**1.2000e-003**	**0.0311**		**134.3723**	**134.3723**	**5.7500e-003**		**134.5158**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2415	12.9875	12.1414	0.0187		0.7126	0.7126		0.6556	0.6556	0.0000	1,853.6832	1,853.6832	0.5865		1,868.3453
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2415**	**12.9875**	**12.1414**	**0.0187**		**0.7126**	**0.7126**		**0.6556**	**0.6556**	**0.0000**	**1,853.6832**	**1,853.6832**	**0.5865**		**1,868.3453**

3.6 Paving - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.7400e-003	0.0981	0.0202	2.5000e-004	5.8100e-003	5.1000e-004	6.3200e-003	1.5900e-003	4.9000e-004	2.0800e-003		27.8116	27.8116	2.6600e-003		27.8780
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0511	0.0320	0.3942	1.0700e-003	0.1068	7.7000e-004	0.1076	0.0283	7.1000e-004	0.0290		106.5607	106.5607	3.0900e-003		106.6379
Total	**0.0539**	**0.1301**	**0.4143**	**1.3200e-003**	**0.1126**	**1.2800e-003**	**0.1139**	**0.0299**	**1.2000e-003**	**0.0311**		**134.3723**	**134.3723**	**5.7500e-003**		**134.5158**

3.7 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	48.1178					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2664	1.8354	1.8413	2.9700e-003		0.1288	0.1288		0.1288	0.1288		281.4481	281.4481	0.0238		282.0423
Total	**48.3842**	**1.8354**	**1.8413**	**2.9700e-003**		**0.1288**	**0.1288**		**0.1288**	**0.1288**		**281.4481**	**281.4481**	**0.0238**		**282.0423**

3.7 Architectural Coating - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0786	0.0492	0.6064	1.6500e-003	0.1643	1.1800e-003	0.1655	0.0436	1.0900e-003	0.0447		163.9396	163.9396	4.7500e-003		164.0582
Total	**0.0786**	**0.0492**	**0.6064**	**1.6500e-003**	**0.1643**	**1.1800e-003**	**0.1655**	**0.0436**	**1.0900e-003**	**0.0447**		**163.9396**	**163.9396**	**4.7500e-003**		**164.0582**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	48.1178					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2664	1.8354	1.8413	2.9700e-003		0.1288	0.1288		0.1288	0.1288	0.0000	281.4481	281.4481	0.0238		282.0423
Total	**48.3842**	**1.8354**	**1.8413**	**2.9700e-003**		**0.1288**	**0.1288**		**0.1288**	**0.1288**	**0.0000**	**281.4481**	**281.4481**	**0.0238**		**282.0423**

3.7 Architectural Coating - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0786	0.0492	0.6064	1.6500e-003	0.1643	1.1800e-003	0.1655	0.0436	1.0900e-003	0.0447		163.9396	163.9396	4.7500e-003		164.0582
Total	**0.0786**	**0.0492**	**0.6064**	**1.6500e-003**	**0.1643**	**1.1800e-003**	**0.1655**	**0.0436**	**1.0900e-003**	**0.0447**		**163.9396**	**163.9396**	**4.7500e-003**		**164.0582**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.4350	5.5306	17.8925	0.0623	5.5949	0.0507	5.6456	1.4943	0.0473	1.5416		6,306.1411	6,306.1411	0.2527		6,312.4592
Unmitigated	1.4350	5.5306	17.8925	0.0623	5.5949	0.0507	5.6456	1.4943	0.0473	1.5416		6,306.1411	6,306.1411	0.2527		6,312.4592

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Manufacturing	905.30	353.12	146.93	2,096,442	2,096,442
Total	905.30	353.12	146.93	2,096,442	2,096,442

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Manufacturing	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Manufacturing	0.583307	0.042169	0.188993	0.113757	0.020157	0.006497	0.019402	0.017654	0.001149	0.000992	0.003948	0.000375	0.001600

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.1468	1.3349	1.1213	8.0100e-003		0.1015	0.1015		0.1015	0.1015		1,601.8241	1,601.8241	0.0307	0.0294	1,611.3430
NaturalGas Unmitigated	0.1468	1.3349	1.1213	8.0100e-003		0.1015	0.1015		0.1015	0.1015		1,601.8241	1,601.8241	0.0307	0.0294	1,611.3430

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Manufacturing	13615.5	0.1468	1.3349	1.1213	8.0100e-003		0.1015	0.1015		0.1015	0.1015		1,601.8241	1,601.8241	0.0307	0.0294	1,611.3430
Total		**0.1468**	**1.3349**	**1.1213**	**8.0100e-003**		**0.1015**	**0.1015**		**0.1015**	**0.1015**		**1,601.8241**	**1,601.8241**	**0.0307**	**0.0294**	**1,611.3430**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Manufacturing	13.6155	0.1468	1.3349	1.1213	8.0100e-003		0.1015	0.1015		0.1015	0.1015		1,601.8241	1,601.8241	0.0307	0.0294	1,611.3430
Total		**0.1468**	**1.3349**	**1.1213**	**8.0100e-003**		**0.1015**	**0.1015**		**0.1015**	**0.1015**		**1,601.8241**	**1,601.8241**	**0.0307**	**0.0294**	**1,611.3430**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

No Hearths Installed

Use Low VOC Cleaning Supplies

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	4.9715	2.2000e-004	0.0243	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0519	0.0519	1.4000e-004		0.0553
Unmitigated	5.3507	2.2000e-004	0.0243	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0519	0.0519	1.4000e-004		0.0553

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.2768					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.0716					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.2700e-003	2.2000e-004	0.0243	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0519	0.0519	1.4000e-004		0.0553
Total	**5.3507**	**2.2000e-004**	**0.0243**	**0.0000**		**9.0000e-005**	**9.0000e-005**		**9.0000e-005**	**9.0000e-005**		**0.0519**	**0.0519**	**1.4000e-004**		**0.0553**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.2768					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.6924					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.2700e-003	2.2000e-004	0.0243	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0519	0.0519	1.4000e-004		0.0553
Total	**4.9715**	**2.2000e-004**	**0.0243**	**0.0000**		**9.0000e-005**	**9.0000e-005**		**9.0000e-005**	**9.0000e-005**		**0.0519**	**0.0519**	**1.4000e-004**		**0.0553**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Agromin Commercial Organics Processing Op.

Ventura County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Manufacturing	236.99	1000sqft	70.00	236,989.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	31
Climate Zone	8			**Operational Year**	2021
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Construction Model_v5

Land Use - Project Site = 70 acres
Buildings = 236,989 sq. ft.

Construction Phase - Phase durations estimated by client.

Off-road Equipment -

Off-road Equipment - Equipment #'s adjusted to Project scope.

Off-road Equipment - Equipment #'s adjusted to Project scope.

Off-road Equipment - Equipment #'s adjusted to Project scope.

Off-road Equipment - Equipment #'s adjusted to Project scope.

Off-road Equipment - Equipment #'s adjusted to Project scope.

Trips and VMT - Total haul trip #'s adjusted to Project scope.
Demolition - SP Material Existing Onsite = 8,190 tons (10/19/2016)

Grading - Total Project Site = 70 acres
Ag. Fields (to remove) = 55 acres

Architectural Coating - Interior Buildings = 236,989 sq. ft.
Assume VCAPCD compliant low-VOC paints (75 g/L).

Consumer Products -

Area Coating - Interior = 236,989 sq. ft.
Parking = 53,690 sq. ft.
Assume VCAPCD compliant low-VOC paint (75 g/L).

Energy Use -

Water And Wastewater -

Solid Waste -

Land Use Change - Approx 55 acres of orchard removed.

Sequestration - Approx 100+ new trees planted (Landscape Plan).

Construction Off-road Equipment Mitigation - Assume T3 for all equipment.
Assume water truck = 2 times/day.

Mobile Land Use Mitigation -

Area Mitigation - Assume VCAPCD compliant low-VOC paints utilized (75 g/L).

Energy Mitigation -

Water Mitigation - Assume low-flow for all water fixtures.

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	118,500.00	0.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	355,500.00	236,989.00
tblArchitecturalCoating	ConstArea_Parking	0.00	53,690.00
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	75.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	75.00
tblArchitecturalCoating	EF_Parking	250.00	75.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	250	75

tblAreaCoating	Area_EF_Nonresidential_Interior	250	75
tblAreaCoating	Area_EF_Parking	250	75
tblAreaCoating	Area_Nonresidential_Exterior	118500	0
tblAreaCoating	Area_Nonresidential_Interior	355500	236989
tblAreaCoating	Area_Parking	0	53690
tblAreaMitigation	UseLowVOCPaintNonresidentialExteriorValue	250	75
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblAreaMitigation	UseLowVOCPaintParkingValue	250	75
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	0
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstructionPhase	NumDays	75.00	21.00
tblConstructionPhase	NumDays	1,110.00	90.00
tblConstructionPhase	NumDays	70.00	14.00
tblConstructionPhase	NumDays	110.00	28.00

tblConstructionPhase	NumDays	75.00	60.00
tblConstructionPhase	NumDays	40.00	21.00
tblGrading	AcresOfGrading	42.00	70.00
tblGrading	AcresOfGrading	0.00	55.00
tblLandUse	LotAcreage	5.44	70.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblProjectCharacteristics	OperationalYear	2018	2021
tblSequestration	NumberOfNewTrees	0.00	100.00
tblTripsAndVMT	HaulingTripNumber	810.00	80.00
tblTripsAndVMT	HaulingTripNumber	0.00	40.00
tblTripsAndVMT	HaulingTripNumber	0.00	80.00
tblTripsAndVMT	HaulingTripNumber	0.00	20.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.7649	2.5456	1.8290	3.6700e-003	0.4237	0.1232	0.5470	0.1521	0.1149	0.2670	0.0000	331.2033	331.2033	0.0724	0.0000	333.0134
Maximum	**0.7649**	**2.5456**	**1.8290**	**3.6700e-003**	**0.4237**	**0.1232**	**0.5470**	**0.1521**	**0.1149**	**0.2670**	**0.0000**	**331.2033**	**331.2033**	**0.0724**	**0.0000**	**333.0134**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.7649	2.5456	1.8290	3.6700e-003	0.2226	0.1232	0.3458	0.0771	0.1149	0.1919	0.0000	331.2030	331.2030	0.0724	0.0000	333.0131
Maximum	**0.7649**	**2.5456**	**1.8290**	**3.6700e-003**	**0.2226**	**0.1232**	**0.3458**	**0.0771**	**0.1149**	**0.1919**	**0.0000**	**331.2030**	**331.2030**	**0.0724**	**0.0000**	**333.0131**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**47.48**	**0.00**	**36.78**	**49.33**	**0.00**	**28.11**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-1-2019	3-31-2019	1.2106	1.2106
2	4-1-2019	6-30-2019	0.8224	0.8224
3	7-1-2019	9-30-2019	0.5980	0.5980
		Highest	1.2106	1.2106

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.9763	2.0000e-005	2.1900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.2300e-003	4.2300e-003	1.0000e-005	0.0000	4.5200e-003
Energy	0.0268	0.2436	0.2046	1.4600e-003		0.0185	0.0185		0.0185	0.0185	0.0000	916.0942	916.0942	0.0320	0.0104	919.9987
Mobile	0.1950	0.8341	2.5447	8.6900e-003	0.7930	7.3400e-003	0.8003	0.2121	6.8500e-003	0.2190	0.0000	797.3259	797.3259	0.0330	0.0000	798.1518
Waste						0.0000	0.0000		0.0000	0.0000	59.6550	0.0000	59.6550	3.5255	0.0000	147.7927
Water						0.0000	0.0000		0.0000	0.0000	17.3875	227.3785	244.7660	1.7953	0.0441	302.7921
Total	**1.1980**	**1.0777**	**2.7515**	**0.0102**	**0.7930**	**0.0259**	**0.8188**	**0.2121**	**0.0254**	**0.2375**	**77.0425**	**1,940.8028**	**2,017.8453**	**5.3858**	**0.0545**	**2,168.7398**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.9071	2.0000e-005	2.1900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.2300e-003	4.2300e-003	1.0000e-005	0.0000	4.5200e-003
Energy	0.0268	0.2436	0.2046	1.4600e-003		0.0185	0.0185		0.0185	0.0185	0.0000	916.0942	916.0942	0.0320	0.0104	919.9987
Mobile	0.1950	0.8341	2.5447	8.6900e-003	0.7930	7.3400e-003	0.8003	0.2121	6.8500e-003	0.2190	0.0000	797.3259	797.3259	0.0330	0.0000	798.1518
Waste						0.0000	0.0000		0.0000	0.0000	59.6550	0.0000	59.6550	3.5255	0.0000	147.7927
Water						0.0000	0.0000		0.0000	0.0000	13.9100	181.9028	195.8128	1.4362	0.0353	242.2337
Total	**1.1288**	**1.0777**	**2.7515**	**0.0102**	**0.7930**	**0.0259**	**0.8188**	**0.2121**	**0.0254**	**0.2375**	**73.5650**	**1,895.3271**	**1,968.8921**	**5.0267**	**0.0457**	**2,108.1814**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**5.78**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**4.51**	**2.34**	**2.43**	**6.67**	**16.17**	**2.79**

2.3 Vegetation

Vegetation

	CO2e
Category	MT
New Trees	70.8000
Vegetation Land Change	-341.0000
Total	**-270.2000**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2019	1/18/2019	5	14	
2	Site Preparation	Site Preparation	1/19/2019	2/18/2019	5	21	
3	Grading	Grading	2/19/2019	3/28/2019	5	28	
4	Building Construction	Building Construction	3/29/2019	8/1/2019	5	90	
5	Paving	Paving	8/2/2019	10/24/2019	5	60	
6	Architectural Coating	Architectural Coating	10/25/2019	11/22/2019	5	21	

Acres of Grading (Site Preparation Phase): 55

Acres of Grading (Grading Phase): 70

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 236,989; Non-Residential Outdoor: 0; Striped Parking Area: 53,690 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	2	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	1	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	2	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	5	13.00	0.00	80.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	4	10.00	0.00	40.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	100.00	39.00	80.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	13.00	0.00	20.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Clean Paved Roads

3.2 Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0887	0.0000	0.0887	0.0134	0.0000	0.0134	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0228	0.2317	0.1316	2.4000e-004		0.0117	0.0117		0.0109	0.0109	0.0000	20.9926	20.9926	5.7200e-003	0.0000	21.1355
Total	**0.0228**	**0.2317**	**0.1316**	**2.4000e-004**	**0.0887**	**0.0117**	**0.1004**	**0.0134**	**0.0109**	**0.0243**	**0.0000**	**20.9926**	**20.9926**	**5.7200e-003**	**0.0000**	**21.1355**

3.2 Demolition - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.3000e-004	0.0121	2.5000e-003	3.0000e-005	6.9000e-004	6.0000e-005	7.5000e-004	1.9000e-004	6.0000e-005	2.5000e-004	0.0000	3.0081	3.0081	2.9000e-004	0.0000	3.0154
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6000e-004	2.5000e-004	2.6700e-003	1.0000e-005	7.3000e-004	1.0000e-005	7.4000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6492	0.6492	2.0000e-005	0.0000	0.6496
Total	**6.9000e-004**	**0.0123**	**5.1700e-003**	**4.0000e-005**	**1.4200e-003**	**7.0000e-005**	**1.4900e-003**	**3.8000e-004**	**6.0000e-005**	**4.5000e-004**	**0.0000**	**3.6573**	**3.6573**	**3.1000e-004**	**0.0000**	**3.6651**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0399	0.0000	0.0399	6.0500e-003	0.0000	6.0500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0228	0.2317	0.1316	2.4000e-004		0.0117	0.0117		0.0109	0.0109	0.0000	20.9926	20.9926	5.7200e-003	0.0000	21.1355
Total	**0.0228**	**0.2317**	**0.1316**	**2.4000e-004**	**0.0399**	**0.0117**	**0.0516**	**6.0500e-003**	**0.0109**	**0.0169**	**0.0000**	**20.9926**	**20.9926**	**5.7200e-003**	**0.0000**	**21.1355**

3.2 Demolition - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.3000e-004	0.0121	2.5000e-003	3.0000e-005	6.9000e-004	6.0000e-005	7.5000e-004	1.9000e-004	6.0000e-005	2.5000e-004	0.0000	3.0081	3.0081	2.9000e-004	0.0000	3.0154
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6000e-004	2.5000e-004	2.6700e-003	1.0000e-005	7.3000e-004	1.0000e-005	7.4000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6492	0.6492	2.0000e-005	0.0000	0.6496
Total	**6.9000e-004**	**0.0123**	**5.1700e-003**	**4.0000e-005**	**1.4200e-003**	**7.0000e-005**	**1.4900e-003**	**3.8000e-004**	**6.0000e-005**	**4.5000e-004**	**0.0000**	**3.6573**	**3.6573**	**3.1000e-004**	**0.0000**	**3.6651**

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1556	0.0000	0.1556	0.0727	0.0000	0.0727	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0287	0.3027	0.1383	2.4000e-004		0.0156	0.0156		0.0144	0.0144	0.0000	21.9651	21.9651	6.9500e-003	0.0000	22.1388
Total	**0.0287**	**0.3027**	**0.1383**	**2.4000e-004**	**0.1556**	**0.0156**	**0.1713**	**0.0727**	**0.0144**	**0.0871**	**0.0000**	**21.9651**	**21.9651**	**6.9500e-003**	**0.0000**	**22.1388**

3.3 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.7000e-004	6.0300e-003	1.2500e-003	2.0000e-005	3.4000e-004	3.0000e-005	3.7000e-004	9.0000e-005	3.0000e-005	1.2000e-004	0.0000	1.5041	1.5041	1.5000e-004	0.0000	1.5077
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.2000e-004	2.9000e-004	3.0800e-003	1.0000e-005	8.5000e-004	1.0000e-005	8.5000e-004	2.2000e-004	1.0000e-005	2.3000e-004	0.0000	0.7490	0.7490	2.0000e-005	0.0000	0.7496
Total	**5.9000e-004**	**6.3200e-003**	**4.3300e-003**	**3.0000e-005**	**1.1900e-003**	**4.0000e-005**	**1.2200e-003**	**3.1000e-004**	**4.0000e-005**	**3.5000e-004**	**0.0000**	**2.2531**	**2.2531**	**1.7000e-004**	**0.0000**	**2.2573**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0700	0.0000	0.0700	0.0327	0.0000	0.0327	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0287	0.3027	0.1383	2.4000e-004		0.0156	0.0156		0.0144	0.0144	0.0000	21.9651	21.9651	6.9500e-003	0.0000	22.1388
Total	**0.0287**	**0.3027**	**0.1383**	**2.4000e-004**	**0.0700**	**0.0156**	**0.0857**	**0.0327**	**0.0144**	**0.0471**	**0.0000**	**21.9651**	**21.9651**	**6.9500e-003**	**0.0000**	**22.1388**

3.3 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.7000e-004	6.0300e-003	1.2500e-003	2.0000e-005	3.4000e-004	3.0000e-005	3.7000e-004	9.0000e-005	3.0000e-005	1.2000e-004	0.0000	1.5041	1.5041	1.5000e-004	0.0000	1.5077
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.2000e-004	2.9000e-004	3.0800e-003	1.0000e-005	8.5000e-004	1.0000e-005	8.5000e-004	2.2000e-004	1.0000e-005	2.3000e-004	0.0000	0.7490	0.7490	2.0000e-005	0.0000	0.7496
Total	**5.9000e-004**	**6.3200e-003**	**4.3300e-003**	**3.0000e-005**	**1.1900e-003**	**4.0000e-005**	**1.2200e-003**	**3.1000e-004**	**4.0000e-005**	**3.5000e-004**	**0.0000**	**2.2531**	**2.2531**	**1.7000e-004**	**0.0000**	**2.2573**

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1214	0.0000	0.1214	0.0504	0.0000	0.0504	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0482	0.5498	0.3222	6.1000e-004		0.0241	0.0241		0.0222	0.0222	0.0000	55.0274	55.0274	0.0174	0.0000	55.4626
Total	**0.0482**	**0.5498**	**0.3222**	**6.1000e-004**	**0.1214**	**0.0241**	**0.1455**	**0.0504**	**0.0222**	**0.0725**	**0.0000**	**55.0274**	**55.0274**	**0.0174**	**0.0000**	**55.4626**

3.4 Grading - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.3000e-004	5.8000e-004	6.1600e-003	2.0000e-005	1.6900e-003	1.0000e-005	1.7100e-003	4.5000e-004	1.0000e-005	4.6000e-004	0.0000	1.4980	1.4980	4.0000e-005	0.0000	1.4991
Total	**8.3000e-004**	**5.8000e-004**	**6.1600e-003**	**2.0000e-005**	**1.6900e-003**	**1.0000e-005**	**1.7100e-003**	**4.5000e-004**	**1.0000e-005**	**4.6000e-004**	**0.0000**	**1.4980**	**1.4980**	**4.0000e-005**	**0.0000**	**1.4991**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0546	0.0000	0.0546	0.0227	0.0000	0.0227	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0482	0.5498	0.3222	6.1000e-004		0.0241	0.0241		0.0222	0.0222	0.0000	55.0273	55.0273	0.0174	0.0000	55.4626
Total	**0.0482**	**0.5498**	**0.3222**	**6.1000e-004**	**0.0546**	**0.0241**	**0.0787**	**0.0227**	**0.0222**	**0.0448**	**0.0000**	**55.0273**	**55.0273**	**0.0174**	**0.0000**	**55.4626**

3.4 Grading - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.3000e-004	5.8000e-004	6.1600e-003	2.0000e-005	1.6900e-003	1.0000e-005	1.7100e-003	4.5000e-004	1.0000e-005	4.6000e-004	0.0000	1.4980	1.4980	4.0000e-005	0.0000	1.4991
Total	**8.3000e-004**	**5.8000e-004**	**6.1600e-003**	**2.0000e-005**	**1.6900e-003**	**1.0000e-005**	**1.7100e-003**	**4.5000e-004**	**1.0000e-005**	**4.6000e-004**	**0.0000**	**1.4980**	**1.4980**	**4.0000e-005**	**0.0000**	**1.4991**

3.5 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0899	0.7922	0.6280	1.0200e-003		0.0469	0.0469		0.0443	0.0443	0.0000	88.6340	88.6340	0.0203	0.0000	89.1425
Total	**0.0899**	**0.7922**	**0.6280**	**1.0200e-003**		**0.0469**	**0.0469**		**0.0443**	**0.0443**	**0.0000**	**88.6340**	**88.6340**	**0.0203**	**0.0000**	**89.1425**

3.5 Building Construction - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.3000e-004	0.0121	2.5000e-003	3.0000e-005	6.9000e-004	6.0000e-005	7.5000e-004	1.9000e-004	6.0000e-005	2.5000e-004	0.0000	3.0081	3.0081	2.9000e-004	0.0000	3.0154
Vendor	7.3100e-003	0.2118	0.0570	4.5000e-004	0.0117	1.7000e-003	0.0134	3.3700e-003	1.6300e-003	5.0000e-003	0.0000	43.9048	43.9048	3.8400e-003	0.0000	44.0008
Worker	0.0179	0.0125	0.1321	3.6000e-004	0.0363	2.7000e-004	0.0366	9.6400e-003	2.5000e-004	9.8800e-003	0.0000	32.1009	32.1009	9.4000e-004	0.0000	32.1245
Total	**0.0255**	**0.2364**	**0.1915**	**8.4000e-004**	**0.0487**	**2.0300e-003**	**0.0507**	**0.0132**	**1.9400e-003**	**0.0151**	**0.0000**	**79.0138**	**79.0138**	**5.0700e-003**	**0.0000**	**79.1407**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0899	0.7922	0.6280	1.0200e-003		0.0469	0.0469		0.0443	0.0443	0.0000	88.6339	88.6339	0.0203	0.0000	89.1424
Total	**0.0899**	**0.7922**	**0.6280**	**1.0200e-003**		**0.0469**	**0.0469**		**0.0443**	**0.0443**	**0.0000**	**88.6339**	**88.6339**	**0.0203**	**0.0000**	**89.1424**

3.5 Building Construction - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.3000e-004	0.0121	2.5000e-003	3.0000e-005	6.9000e-004	6.0000e-005	7.5000e-004	1.9000e-004	6.0000e-005	2.5000e-004	0.0000	3.0081	3.0081	2.9000e-004	0.0000	3.0154
Vendor	7.3100e-003	0.2118	0.0570	4.5000e-004	0.0117	1.7000e-003	0.0134	3.3700e-003	1.6300e-003	5.0000e-003	0.0000	43.9048	43.9048	3.8400e-003	0.0000	44.0008
Worker	0.0179	0.0125	0.1321	3.6000e-004	0.0363	2.7000e-004	0.0366	9.6400e-003	2.5000e-004	9.8800e-003	0.0000	32.1009	32.1009	9.4000e-004	0.0000	32.1245
Total	**0.0255**	**0.2364**	**0.1915**	**8.4000e-004**	**0.0487**	**2.0300e-003**	**0.0507**	**0.0132**	**1.9400e-003**	**0.0151**	**0.0000**	**79.0138**	**79.0138**	**5.0700e-003**	**0.0000**	**79.1407**

3.6 Paving - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0372	0.3896	0.3642	5.6000e-004		0.0214	0.0214		0.0197	0.0197	0.0000	50.4490	50.4490	0.0160	0.0000	50.8480
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0372**	**0.3896**	**0.3642**	**5.6000e-004**		**0.0214**	**0.0214**		**0.0197**	**0.0197**	**0.0000**	**50.4490**	**50.4490**	**0.0160**	**0.0000**	**50.8480**

3.6 Paving - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.0000e-005	3.0200e-003	6.3000e-004	1.0000e-005	1.7000e-004	2.0000e-005	1.9000e-004	5.0000e-005	1.0000e-005	6.0000e-005	0.0000	0.7520	0.7520	7.0000e-005	0.0000	0.7539
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5500e-003	1.0900e-003	0.0114	3.0000e-005	3.1400e-003	2.0000e-005	3.1700e-003	8.4000e-004	2.0000e-005	8.6000e-004	0.0000	2.7821	2.7821	8.0000e-005	0.0000	2.7841
Total	**1.6300e-003**	**4.1100e-003**	**0.0121**	**4.0000e-005**	**3.3100e-003**	**4.0000e-005**	**3.3600e-003**	**8.9000e-004**	**3.0000e-005**	**9.2000e-004**	**0.0000**	**3.5341**	**3.5341**	**1.5000e-004**	**0.0000**	**3.5380**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0372	0.3896	0.3642	5.6000e-004		0.0214	0.0214		0.0197	0.0197	0.0000	50.4489	50.4489	0.0160	0.0000	50.8480
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0372**	**0.3896**	**0.3642**	**5.6000e-004**		**0.0214**	**0.0214**		**0.0197**	**0.0197**	**0.0000**	**50.4489**	**50.4489**	**0.0160**	**0.0000**	**50.8480**

3.6 Paving - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.0000e-005	3.0200e-003	6.3000e-004	1.0000e-005	1.7000e-004	2.0000e-005	1.9000e-004	5.0000e-005	1.0000e-005	6.0000e-005	0.0000	0.7520	0.7520	7.0000e-005	0.0000	0.7539
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5500e-003	1.0900e-003	0.0114	3.0000e-005	3.1400e-003	2.0000e-005	3.1700e-003	8.4000e-004	2.0000e-005	8.6000e-004	0.0000	2.7821	2.7821	8.0000e-005	0.0000	2.7841
Total	**1.6300e-003**	**4.1100e-003**	**0.0121**	**4.0000e-005**	**3.3100e-003**	**4.0000e-005**	**3.3600e-003**	**8.9000e-004**	**3.0000e-005**	**9.2000e-004**	**0.0000**	**3.5341**	**3.5341**	**1.5000e-004**	**0.0000**	**3.5380**

3.7 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.5052					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.8000e-003	0.0193	0.0193	3.0000e-005		1.3500e-003	1.3500e-003		1.3500e-003	1.3500e-003	0.0000	2.6809	2.6809	2.3000e-004	0.0000	2.6866
Total	**0.5080**	**0.0193**	**0.0193**	**3.0000e-005**		**1.3500e-003**	**1.3500e-003**		**1.3500e-003**	**1.3500e-003**	**0.0000**	**2.6809**	**2.6809**	**2.3000e-004**	**0.0000**	**2.6866**

3.7 Architectural Coating - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.3000e-004	5.8000e-004	6.1600e-003	2.0000e-005	1.6900e-003	1.0000e-005	1.7100e-003	4.5000e-004	1.0000e-005	4.6000e-004	0.0000	1.4980	1.4980	4.0000e-005	0.0000	1.4991
Total	**8.3000e-004**	**5.8000e-004**	**6.1600e-003**	**2.0000e-005**	**1.6900e-003**	**1.0000e-005**	**1.7100e-003**	**4.5000e-004**	**1.0000e-005**	**4.6000e-004**	**0.0000**	**1.4980**	**1.4980**	**4.0000e-005**	**0.0000**	**1.4991**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.5052					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.8000e-003	0.0193	0.0193	3.0000e-005		1.3500e-003	1.3500e-003		1.3500e-003	1.3500e-003	0.0000	2.6809	2.6809	2.3000e-004	0.0000	2.6866
Total	**0.5080**	**0.0193**	**0.0193**	**3.0000e-005**		**1.3500e-003**	**1.3500e-003**		**1.3500e-003**	**1.3500e-003**	**0.0000**	**2.6809**	**2.6809**	**2.3000e-004**	**0.0000**	**2.6866**

3.7 Architectural Coating - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.3000e-004	5.8000e-004	6.1600e-003	2.0000e-005	1.6900e-003	1.0000e-005	1.7100e-003	4.5000e-004	1.0000e-005	4.6000e-004	0.0000	1.4980	1.4980	4.0000e-005	0.0000	1.4991
Total	**8.3000e-004**	**5.8000e-004**	**6.1600e-003**	**2.0000e-005**	**1.6900e-003**	**1.0000e-005**	**1.7100e-003**	**4.5000e-004**	**1.0000e-005**	**4.6000e-004**	**0.0000**	**1.4980**	**1.4980**	**4.0000e-005**	**0.0000**	**1.4991**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1950	0.8341	2.5447	8.6900e-003	0.7930	7.3400e-003	0.8003	0.2121	6.8500e-003	0.2190	0.0000	797.3259	797.3259	0.0330	0.0000	798.1518
Unmitigated	0.1950	0.8341	2.5447	8.6900e-003	0.7930	7.3400e-003	0.8003	0.2121	6.8500e-003	0.2190	0.0000	797.3259	797.3259	0.0330	0.0000	798.1518

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Manufacturing	905.30	353.12	146.93	2,096,442	2,096,442
Total	905.30	353.12	146.93	2,096,442	2,096,442

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Manufacturing	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Manufacturing	0.583307	0.042169	0.188993	0.113757	0.020157	0.006497	0.019402	0.017654	0.001149	0.000992	0.003948	0.000375	0.001600

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	650.8942	650.8942	0.0269	5.5600e-003	653.2228
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	650.8942	650.8942	0.0269	5.5600e-003	653.2228
NaturalGas Mitigated	0.0268	0.2436	0.2046	1.4600e-003		0.0185	0.0185		0.0185	0.0185	0.0000	265.2000	265.2000	5.0800e-003	4.8600e-003	266.7759
NaturalGas Unmitigated	0.0268	0.2436	0.2046	1.4600e-003		0.0185	0.0185		0.0185	0.0185	0.0000	265.2000	265.2000	5.0800e-003	4.8600e-003	266.7759

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Manufacturing	4.96966e+006	0.0268	0.2436	0.2046	1.4600e-003		0.0185	0.0185		0.0185	0.0185	0.0000	265.2000	265.2000	5.0800e-003	4.8600e-003	266.7759
Total		**0.0268**	**0.2436**	**0.2046**	**1.4600e-003**		**0.0185**	**0.0185**		**0.0185**	**0.0185**	**0.0000**	**265.2000**	**265.2000**	**5.0800e-003**	**4.8600e-003**	**266.7759**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Manufacturing	4.96966e+006	0.0268	0.2436	0.2046	1.4600e-003		0.0185	0.0185		0.0185	0.0185	0.0000	265.2000	265.2000	5.0800e-003	4.8600e-003	266.7759
Total		**0.0268**	**0.2436**	**0.2046**	**1.4600e-003**		**0.0185**	**0.0185**		**0.0185**	**0.0185**	**0.0000**	**265.2000**	**265.2000**	**5.0800e-003**	**4.8600e-003**	**266.7759**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Manufacturing	2.04285e+006	650.8942	0.0269	5.5600e-003	653.2228
Total		**650.8942**	**0.0269**	**5.5600e-003**	**653.2228**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Manufacturing	2.04285e+006	650.8942	0.0269	5.5600e-003	653.2228
Total		**650.8942**	**0.0269**	**5.5600e-003**	**653.2228**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

No Hearths Installed

Use Low VOC Cleaning Supplies

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.9071	2.0000e-005	2.1900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.2300e-003	4.2300e-003	1.0000e-005	0.0000	4.5200e-003
Unmitigated	0.9763	2.0000e-005	2.1900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.2300e-003	4.2300e-003	1.0000e-005	0.0000	4.5200e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0505					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.9256					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.0000e-004	2.0000e-005	2.1900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.2300e-003	4.2300e-003	1.0000e-005	0.0000	4.5200e-003
Total	**0.9763**	**2.0000e-005**	**2.1900e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**4.2300e-003**	**4.2300e-003**	**1.0000e-005**	**0.0000**	**4.5200e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0505					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.8564					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.0000e-004	2.0000e-005	2.1900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.2300e-003	4.2300e-003	1.0000e-005	0.0000	4.5200e-003
Total	**0.9071**	**2.0000e-005**	**2.1900e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**4.2300e-003**	**4.2300e-003**	**1.0000e-005**	**0.0000**	**4.5200e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	195.8128	1.4362	0.0353	242.2337
Unmitigated	244.7660	1.7953	0.0441	302.7921

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Manufacturing	54.8062 / 0	244.7660	1.7953	0.0441	302.7921
Total		**244.7660**	**1.7953**	**0.0441**	**302.7921**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Manufacturing	43.845 / 0	195.8128	1.4362	0.0353	242.2337
Total		**195.8128**	**1.4362**	**0.0353**	**242.2337**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	59.6550	3.5255	0.0000	147.7927
Unmitigated	59.6550	3.5255	0.0000	147.7927

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Manufacturing	293.88	59.6550	3.5255	0.0000	147.7927
Total		**59.6550**	**3.5255**	**0.0000**	**147.7927**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Manufacturing	293.88	59.6550	3.5255	0.0000	147.7927
Total		**59.6550**	**3.5255**	**0.0000**	**147.7927**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	-270.2000	0.0000	0.0000	-270.2000

11.1 Vegetation Land Change

Vegetation Type

	Initial/Final	Total CO2	CH4	N2O	CO2e
	Acres	MT			
Cropland	55 / 0	-341.0000	0.0000	0.0000	-341.0000
Total		**-341.0000**	**0.0000**	**0.0000**	**-341.0000**

11.2 Net New Trees

Species Class

	Number of Trees	Total CO2	CH4	N2O	CO2e
		MT			
Miscellaneous	100	70.8000	0.0000	0.0000	70.8000
Total		**70.8000**	**0.0000**	**0.0000**	**70.8000**

SESPE CONSULTING, INC.

MEMORANDUM

374 Poli Street, Suite 200 • Ventura, California 93001

Date: February 28, 2020

To: Nicole Collazo (VCAPCD)
Sent by email with attached Excel files

From: Rob Dal Farra

Cc: Ali Ghasemi (VCAPCD)
John Oquendo (VCRMA Planning Division)

Re: Project VOC Emissions for Agromin Limoneira Composting Facility Project

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As discussed during our meeting on 1/30/20, Sespe has re-evaluated the expected baseline landfill VOC emissions for the proposed Agromin Limoneira composting project using a methodology based on flared landfill gas from the local landfills that receive organic waste which can be diverted to the proposed Agromin project. In conducting the re-evaluation, Sespe has reconsidered a number of the assumptions utilized in the original Air Quality and Climate Change Impact Assessment (AQCCIA) for the project and discussed in follow up meetings with the VCAPCD. The calculations provided in the attached spreadsheets are now based on the following (using 2014 as the baseline year);

- As the project was designed to only consider West County divertible compostable waste, previous discussions assumed 100% of the divertible waste was coming from Toland landfill so only Toland flared landfill gas was being considered. In reality a large portion of West County waste goes to the Simi Valley landfill (see ***CalRecycle-CountywideDestinationDetail.xls***). Based on the CalRecycle Countywide Destination Detail for 2014, 85% of the waste deposited in Toland landfill and 42% of the waste deposited in Simi Valley landfill originated from West Ventura County. Consequently, the updated VOC calculations assumed 85% of the landfill gas flared at Toland in 2014 and 42% of the landfill gas flared at Simi Valley in 2014 was attributed to West County waste.

- 2014 flared gas volumes for Toland and Simi Valley were obtained from the EPA's Greenhouse Gas Reporting Program (GHGRP https://www.epa.gov/ghgreporting) which contains information including annual landfill gas (LFG) collected for landfill sites across the country (see spreadsheet ***EPA Landfill GHG Reporting - Toland and Simi 2014.xlsx***).

- The percentage of landfill gas attributed to West County divertible compostable waste was estimated at 67.5% (see spreadsheet ***Profile for Landfill Gas Generating Waste_WARM.xlsx***). This is based on information found in:

- *FINAL 2014 Cal Recycle Waste Characterization Report - Disposal Facility Based* in *Table 46: Composition of California's Overall Disposed Waste Stream Using Expanded Material Types*
- *Table 33: Selected Compost/Mulch Material Types, Disposed Composition by Sector*
- EPA's Waste Reduction Model. WARM was used to identify the waste streams that generate landfill gas.

Calculations based on these references show that 60.9% of the waste going to landfills has the potential to degrade and generate 100% of the landfill gas, and that 41.1% of all waste going into landfills can be diverted for composting. Consequently, 67.5% of the landfill gas is created by divertible waste (41.1% ÷ 60.9% = 67.5%).

- The Draft 2008 AP42 2.4 - MUNICIPAL SOLID WASTE LANDFILLS recommends using site specific landfill gas data if it is available for non-methane organics (NMOC) content. Sespe located a 2009 Source Test Summary for the Toland Landfill that showed the inlet NMOC concentration to the landfill flare was 7,820 ppmv as CH_4 or 1,306 ppmv as hexane. This value was used in the calculations and is consistent with the range of NMOC levels (31 to 5,387 ppmv as hexane) found in the testing results referenced in the "*Background Information Document for Updating AP42 Section 2.4 for Estimating Emissions from Municipal Solid Waste Landfills, September 2008*". Similar information for the Simi landfill could not be found.

- % VOCs in NMOC was taken from the Draft 2008 AP42 2.4 -*Table 2.4-1. DEFAULT CONCENTRATIONS FOR LFG CONSTITUENTS FOR LANDFILLS WITH WASTE IN PLACE ON OR AFTER 1992*. That table shows % VOCs in NMOC as 99.7%, based on speciated emission test data.

The revised baseline landfill VOC emissions are shown in the spreadsheet ***AG01-Emission Calcs_v10 - Landfill VOC Using Flared Gas.xlsm*** on the tab ***LANDFILL BASELINE VOC***. The resulting calculations now show the project incremental VOC emissions applicable to CEQA significance thresholds is 22.05 lb./day which is below the 25 lb./day CEQA significance threshold (see tab ***Criteria & GHG Summary***).

Attached Excel Files:

AG01-Emission Calcs_v10 - Landfill VOC Using Flared Gas.xlsm
CalRecycle-CountywideDestinationDetail.xls
EPA Landfill GHG Reporting - Toland and Simi 2014.xlsx
Profile for Landfill Gas Generating Waste_WARM.xlsx

Activity Level Assumptions (pg 1 of 2)

Stationary Source Activities

Parameter	Baseline (Oxnard + Santa Paula)			Post-Project Total			Project Increment		
	Peak Year	Peak Day	Peak Hour	Peak Year	Peak Day	Peak Hour	Peak Year	Peak Day	Peak Hour
Stockpiling and Processing (tons)	113,862	343	34	295,000	889	56	181,138	546	22
Windrow Composting (tons)	98,225	296	30	180,000	542	34	81,775	246	4
Anaerobic Digestion (AD) Throughput	0	0	0	40,000	121	8	40,000	121	8
Covered Aerated Storage Piles (CASP, tons)	15,637	47	5	75,000	226	14	59,363	179	9
Finished compost storage and loadout	56,406	239	24	134,968	571	36	78,562	332	12

Open windrow active and curing phase composting - includes post AD & CASP material	256,350
Windrow turning - includes post AD & CASP material	256,350
Screening processs-post composting, CASP and AD	134,968
Screening drops - post composting, CASP and AD	134,968

	Baseline	Project	SCAQMD 1133-3	SJVAPCD 4566
Green material stockpile storage pre-processing (days)	5	2	NA	3
Food material stockpile storage pre-processing (days) [1]	0.5	0.5	2	3

1 - Currently food waste is processed immediately, for Project it will go directly to a biofilter controlled building

On Road Vehicle Source Activities

Vehicle Type	Baseline VMT (Oxnard + Santa Paula)			Post-Project Total VMT			Project Increment		
	Per Year	Peak Day	Peak Hour	Per Year	Peak Day	Peak Hour	Per Year	Peak Day	Peak Hour
HHD Solid Waste Collection Truck (Diesel)	390,009	1,618	162	282,263	1,218	122	-107,746	-400	-40
HHD Solid Waste Collection Truck (CNG)	260,006	1,079	108	188,175	812	81	-71,831	-267	-27
HHD Fleet Truck (Diesel)	681,015	3,221	322	650,459	3,102	310	-30,556	-119	-12
Light Duty Truck (Gasoline)	101,468	391	39	474,506	2,032	203	373,038	1,641	164
Light Duty Truck (Diesel)	101,468	391	39	474,506	2,032	203	373,038	1,641	164
Passenger Cars (Gasoline)	264,160	980	98	322,400	1,380	138	58,240	400	40
Totals:	**1,798,126**	**7,680**	**768**	**2,392,309**	**10,576**	**1,057**	**594,183**	**2,896**	**289**

On-Site Vehicle Miles

Vehicle	Route	BASELINE (Oxnard + Santa Paula)			PROJECT		
		Vehicles per year	Miles/trip	Ave. Weight (tons)[1]	Vehicles per year	Miles/trip	Ave. Weight (tons)[1]
HHD Solid Waste Collection Truck	Entrance-Tipping	6,576	0.24	20.4	19,000	0.73	20.5
HHD Fleet Truck from MRFs	Entrance-Tipping	3,061	0.24	23.0	6,225	0.73	23.9
Light Duty Truck - Business/Self Haul	Entrance-Tipping	7,520	0.24	3.5	32,159	0.73	3.3
HHD Fleet - Roll off	Entrance-Tipping	1,204	0.24	17.4	1,439	0.73	17.5
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	Entr.-Sales Yard	690	0.19	22.5	1,788	0.30	22.5
HHD Fleet Truck - Finished Compost, Mulch, etc.	Sales Yard-Entr.	5,446	0.45	19.1	15,960	0.45	19.1
Light Duty Truck - Outgoing Sales	Sales Yard-Entr.	2,172	0.45	2.8	6,365	0.45	2.8
Avoided Landfill Trips- HHD from MRF	@ Landfill	10,158	1.67	23.9	---	---	---
1 - average of loaded & empty vehicle	Total:	**36,827**		Total:	**82,937**		

Activity Level Assumptions (pg 2 of 2)

Freeway to Entrance Vehicle Miles (for HRA)

	BASELINE (SP)	PROJECT	
Vehicle	**Vehicles per year**	**Vehicles per year**	**Miles**
HHD Solid Waste Collection Truck (Diesel)	2,098	11,400	6.20
HHD Solid Waste Collection Truck (CNG)	1,398	7,600	6.20
HHD Fleet Truck from MRFs	1,547	6,225	6.20
Light Duty Truck - Business/Self Haul	2,491	32,159	6.20
HHD Fleet - Roll off	772	1,439	6.20
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	0	1,788	6.20
HHD Fleet Truck - Finished Compost, Mulch, etc.	1,580	15,960	6.20
Light Duty Truck	1,572	6,365	6.20
Total:	**11,459**	**82,937**	

Project Assumptions

Parameter	Baseline	Project
Incoming Waste Trip Days/Year	312	260
Incoming waste deliveries hours per day (7AM - 5P	10	10
Outgoing Sales/Incoming Vendor/Visitor/ Trip Day	260	260
Increase From Average to Peak Day (per M. Harris	10%	10%
feedstock processing days/year	312	365
feedstock processing hours/day	10	16
active composting	365	365
Windrow & outdoor material processing days/year	312	365
Windrow & outdoor material processing hours/day	12	12

Throughputs	Food	Green	Total
2014 baseline incoming feedstock (tons)	15,637	98,225	113,862
Project incoming feedstock (tons)	65,500	229,500	295,000
Project increment (tons)	49,863	131,275	181,138
Project:Baseline ratio	4.19	2.34	2.59

BASELINE:	**Peak Day Emissions (lb/day)**						**Peak Year Emissions (ton/year)**						
Source	**ROC**	**NOx**	**CO**	**PM10**	**PM2.5**	**NH3**	**ROC**	**NOx**	**CO**	**PM10**	**PM2.5**	**NH3**	**CO2e (MT)**
Stationary													
Material Handling Fugitive Dust				4.22	1.74					0.59	0.25		
Stockpile/Windrow/CASP Volatiles	1176.0					198	195.1					32.9	
Avoided Landfill Volatiles	295.5					257	49.0					42.6	
Avoided Landfill GHG*													58,891
Avoided Landfill Flare Emissions	26.2	157.0	523.4	52.3	52.3		4.8	28.7	95.5	9.6	9.6		
Stationary Total	1,497.6	157.0	523.4	56.6	54.1	454.9	248.9	28.7	95.5	10.1	9.8	75.5	58,891
Mobile													
Off Road Engine Exhaust **	8.2	118.9	189.6	4.7	4.3		1.29	18.55	29.58	0.74	0.68		2,547
Motor Vehicle Fugitive PM				23.22	2.32					3.96	0.40		
Motor Vehicle Exhaust	3.45	110.36	36.43	0.71	0.68		0.538	17.2	5.7	0.11	0.11		3217
Mobile Total	11.7	229.3	226.1	28.7	7.3	0.0	1.8	35.8	35.3	4.8	1.2	0.0	5,764

*Alternative avoided landfill GHG emissions using CARB CERFs: 88,676 MT CO2e/year

** Does not account for emissions from landfill handling of diverted compostables

PROJECT:	**Peak Day Emissions (lb/day)**						**Peak Year Emissions (ton/year)**						
Source	**ROC**	**NOx**	**CO**	**PM10**	**PM2.5**	**NH3**	**ROC**	**NOx**	**CO**	**PM10**	**PM2.5**	**NH3**	**CO2e (MT)**
Stationary													
Material Handling Fugitive Dust				8.79	3.07					1.36	0.51		
Stockpile/Windrow/CASP/AD Volatiles	1,525					391	252.97					64.935	
AD CHP Engine Exhaust	7.4	38.9	58.3	0.7	0.6		1.35	7.09	10.64	0.12	0.11		8.06
AD Flare Emissions	0.2	0.2	1.3	0.018	0.016		0.03	0.04	0.24	0.003	0.003		0.24
Stationary Total	1,532.3	39.1	59.6	9.5	3.7	391.4	254.4	7.1	10.9	1.5	0.6	64.9	8
Mobile													
Off Road Engine Exhaust	4.4	26.3	126.0	1.1	1.0		0.81	4.81	22.99	0.20	0.19		2,172
Motor Vehicle Fugitive PM				3.02	0.30					0.39	0.04		
Motor Vehicle Exhaust	2.17	68.49	40.25	0.30	0.28		0.28	8.90	5.23	0.04	0.04		2,835
Mobile Total	6.6	94.8	166.2	4.4	1.6	0.0	1.1	13.7	28.2	0.6	0.3	0.0	5,007

PROJECT INCREMENT:	**Peak Day Emissions (lb/day)**						**Peak Year Emissions (ton/year)**						
Source	**ROC**	**NOx**	**CO**	**PM10**	**PM2.5**	**NH3**	**ROC**	**NOx**	**CO**	**PM10**	**PM2.5**	**NH3**	**CO2e (MT)**
Stationary													
Material Handling Fugitive Dust				4.58	1.33					0.77	0.26		
Stockpile/Windrow/CASP/AD Volatiles	348.76					193.34	57.86					32.08	
Avoided Landfill Volatiles	-295.45					-256.88	-49.02					-42.62	
Avoided Landfill GHG													-58,891
Avoided Landfill Flare Emissions	-26.2	-157.0	-523.4	-52.3	-52.3		-4.8	-28.7	-95.5	-9.6	-9.6		
AD CHP Engine Exhaust (APCD permitted)	7.38	38.85	58.28	0.66	0.61		1.35	7.09	10.64	0.12	0.11		8.06
AD Flare Emissions (APCD permitted)	0.18	0.24	1.30	0.02	0.02		0.03	0.04	0.24	0.00	0.00		0.24
Stationary Total	34.7	-117.9	-463.8	-47.1	-50.4	-63.5	5.4	-21.5	-84.6	-8.7	-9.2	-10.5	-58,883.1
Mobile													
Off Road Engine Exhaust	-3.8	-92.6	-63.7	-3.6	-3.3		-0.48	-13.74	-6.59	-0.53	-0.49		-375
Motor Vehicle Fugitive PM				-20.20	-2.02					-3.56	-0.36		
Motor Vehicle Exhaust	-1.28	-41.87	3.82	-0.42	-0.40		-0.26	-8.31	-0.45	-0.07	-0.07		-382
Mobile Total	-5.1	-134.4	-59.8	-24.2	-5.7	0.0	-0.7	-22.1	-7.0	-4.2	-0.9	0.0	-757

Project Increment Total:	29.6	-252.4	-523.7	-71.3	-56.1	-63.5	4.7	-43.6	-91.7	-12.8	-10.1	-10.5	-59,639.7
Applicable to CEQA significance thresholds	22.05	-291.5	-583.2	-72.0	-56.7	-63.5	3.3	-50.7	-102.6	-13.0	-10.2	-10.5	-59,639.7
Not applicable to CEQA significance thresholds (VCAPCD permitted)	7.6	39.1	59.6	0.7	0.6	0.0	1.4	7.1	10.9	0.1	0.1	0.0	

Fugitive VOC Emissions

Emissions Factor

Parameter	Factor	Unit	Source of Emission Factor
Stockpiling VOC	0.20	lbs/wet ton-day	ARB Emissions Inventory Methodology for Composting Facilities, Table III-1, 3/2/2015 (green & food mat'l)
Stockpiling NH3	N/A	lbs/wet ton-day	ARB Emissions Inventory Methodology for Composting Facilities, Table III-1, 3/2/2015 (green & food mat'l)
Compost + Cure VOC	3.58	lbs/wet ton	ARB Emissions Inventory Methodology for Composting Facilities, Table III-1, 3/2/2015 (green & food mat'l)
Compost + Cure NH3	0.78	lbs/wet ton	ARB Emissions Inventory Methodology for Composting Facilities, Table III-1, 3/2/2015 (green & food mat'l)
Compost + Cure CH4	0.049	MT CO2e/wet ton	CARB, Table 5 "Method for Estimating Greenhouse Gas Emission Reductions from Diversion of Organic Waste from Landfills to Compost Facilities", March 2016
Compost + Cure N2O	0.021	MT CO2e/wet ton	
Compost + Cure CO2e*	0.07	MT CO2e/wet ton	Total of CH4 and N2O
Landfill % NH3	0.7%	% NH3 to methane	0.7% NH3 to methane (Eggleston, 1992) %NH3 x methane mmscf/day x1,000,000 x NH3 density lb/ft3 x 365 day/year
Landfill CO2e - food	0.69	MT CO2e/wet ton	CARB, Table 11 "Method for Estimating Greenhouse Gas Emission Reductions from Diversion of Organic Waste from Landfills to Compost Facilities", March 2016
Landfill CO2e - green	0.51	MT CO2e/wet ton	
Landfill CO2e - mixed	0.63	MT CO2e/wet ton	
Anaerobic Digester Fugitive VOC, NH3	NA	NA	Assumed to be negligible since gases generated will be collected and either treated and burned in an IC engine (to generate electricity) or flared.

* Note that, according to the CARB source referenced, CO2 emissions from composting are not included in the CO2e calculation because they are biogenic.

Emissions Control Efficiency

Emission Source	VOC Control (%)	NH3 Control (%)	Comment
Project Windrow Composting/Cure	40%	20%	assumes Project piles managed in compliance with SCAQMD's Rule 1133-3.
Baseline Windrow Composting/Cure	19%	19%	assumes existing composting practices meet SJVAPCD water management requirements
Covered Aerated Pile	90%	70%	assumes postive air and CARB control factor
Landfill Flare	73.3%	50.0%	Approx. combined VOC capture & control efficiency - 75% x 97.7% (AP42 2.4 DRAFT) Ammonia capture and control assumed to be 50% (no literature found)*

***Ammonia combustion:** The combustion of ammonia in air is very difficult in the absence of a catalyst (such as platinum gauze or warm chromium(III) oxide), due to the relatively low heat of combustion, a lower laminar burning velocity, high auto-ignition temperature, high heat of vaporization, and a narrow flammability range. Ammonia does not burn readily or sustain combustion, except under narrow fuel-to-air mixtures of 15–25% air.

Baseline Emissions:

peak day factor: 110%

Parameter	Throughput (wet ton/yr)	Peak Year Emissions GHG CO2e (MT/year)	Avg. Year Emissions VOC (lb/year)	Avg. Year Emissions NH3 (lb/year)	Average Day Emissions VOC (lb/day)	Average Day Emissions NH3 (lb/day)	Peak Day Emissions VOC (lb/day)	Peak Day Emissions NH3 (lb/day)
Stockpiling (green material)	98,225	0	98,225	0	269	0	296	0
Food material stockpiling	15,637	0	1,564	0	4		5	0
Windrow Composting & Cure	98,225	6,876	284,833	62,059	780	170	858	187
CASP Composting	15,637	1,095	5,598	3,659	15	10	17	11
Totals without landfill component:		7,970	390,220	65,718	1,069	180	1,176	198
Landfill (avoided emissions)[1]	181,138	101,356	**98,037**	85,239	269	234	295	257
Totals:		109,326	488,256	150,956	1,338	414	1,471	455

1 - From LANDFILL BASELINE VOC tab

Project Total Emissions:

peak day factor: 110%

Parameter	Throughput (wet ton/yr)	Peak Year Emissions GHG CO2e (MT/year)	Avg. Year Emissions VOC (lb/year)	Avg. Year Emissions NH3 (lb/year)	Average Day Emissions VOC (lb/day)	Average Day Emissions NH3 (lb/day)	Peak Day Emissions VOC (lb/day)	Peak Day Emissions NH3 (lb/day)
Stockpiling (green material)	229,500	0	91,800	0	252	0	277	0
Wet organic bldg - 90% control biofilter (food stockpiling)[2]	65,500	0	655	0	2	0	2	0
Windrow Composting & Cure	180,000	12,600	386,640	112,320	1,059	308	1,165	338
Anaerobic Digestion (AD) [1]	40,000	2,800	0	0	0	0	0	0
CASP Composting	75,000	5,250	26,850	17,550	74	48	81	53
Totals:		20,650	505,945	129,870	1,386	356	1,525	391

1 - Methane and VOC emissions from AD process are assumed to be captured and controlled 99+% by flare or boiler or IC engine. GHG emissions addressed under combustion estimates

2 - Food material is taken into a biofilter controlled building and processed (90% control)

PROJECT (ton/yr):	Incoming green:	229,500	Incoming Food:	65,500	Total:	295,000
BASELINE LIMONEIRA ONLY (ton/yr):	Incoming green:	58,619	Incoming Food:	0	Total:	58,619
BASELINE OXNARD ONLY (ton/yr):	Incoming green:	39,606	Incoming Food:	15,637	Total:	55,243
	Baseline Green:	98,225	Baseline Food:	15,637	Baseline Total:	113,862
					Project Increment:	181,138

Project Increment Emissions

Parameter	Throughput (wet ton/yr)	Peak Year Emissions GHG CO2e (MT/year)	Avg. Year Emissions VOC (lb/year)	Avg. Year Emissions NH3 (lb/year)	Average Day Emissions VOC (lb/day)	Average Day Emissions NH3 (lb/day)	Peak Day Emissions VOC (lb/day)	Peak Day Emissions NH3 (lb/day)
Project Increment (with landfill)	181,138	-88,676	17,689	-21,086	48	-58	53	-64

1 - Increment for Project vs Santa Paula + Oxnard. For analysis above, overall increment = 0.

Tons/year:	**8.8**	-10.5

48.46215644

ARB Emissions Inventory Methodology for Composting Facilities (3/2/2015)

III. Recommended Emission Estimation Approaches

Total Annual Emissions = (CPEF x (1-CE) x TP) + (SEF x SD x TP);

Where

- o CPEF = Composting Process Emission Factor (lbs/wet-ton)
- o SEF = Stockpile Emission Factor (lbs/wet ton-day)
- o SD = Average number of days material is stockpiled (days)
- o CE = Control Efficiency (Percentage)
- o TP = Total annual facility throughput (wet-tons)

Table III-1: Recommended Emission Factors for Greenwaste and Foodwaste[1]

Pollutant	Stockpile(lbs/wet ton-day)	Composting Process(lbs/wet ton)
VOC	0.20	3.58
NH3	N/A	0.78

1-Foodwaste, biosolids, and manure can be a maximum of 15% by weight of the total mixture with greenwaste.

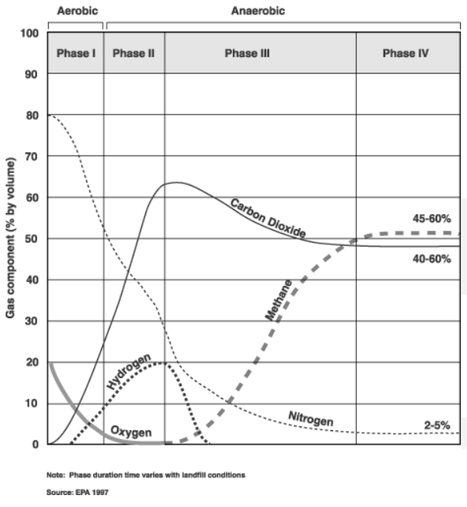
ARB Emissions Inventory Methodology for Composting Facilities (3/2/2015)

Table III-3: Control Techniques for Composting Operations

Control Type	Aeration	Control Efficiency VOC	Control Efficiency NH3
Windrow			
Static Pile – No Biofilter	Passive	0%	0%
Managed Windrow – No Biofilter	Passive	0%	0%
Water Management Requirements[1]	Passive	19%	19%
Static Pile/Passively Aerated Windrow covered 15 days with a biofilter [2]	Passive	40%	20%
Static Pile/Passively Aerated Windrow covered 22 days with a biofilter[1]	Passive	60%	20%
Aerated Static Pile (ASP)			
Negative ASP with Biofilter (classic)	Forced, Negative Air	26%	23%
Positive ASP with Biofilter Cover	Forced, Positive Air	80%-98%	53%

1 - Requires compliance with pile management and/or watering requirements in SJVAPCD's rule 4566.

2 - Requires compliance with pile management and/or watering requirements in SCAQMD's rule 1133.3



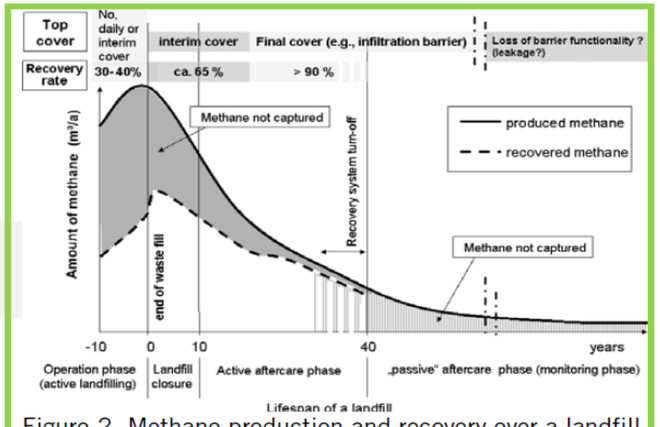


Figure 2. Methane production and recovery over a landfill lifetime (Humer-Huber et al, 2008)
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Methane collection at a landfill often does not begin until the active portion of the landfill ("the cell") where the wastes are buried is "capped' (covered with an impermeable membrane).

The USEPA estimates that over the life of a landfill 25% of the methane generated in a landfill with gas collection will escape. Some advocates of bioreactors put that number as low as 10%, while some critics put it as high as 80%.

ANALYSIS OF BASELINE VOC EMISSIONS FROM LANDFILLS DUE TO COMPOSTABLE MATERIALS PLANNED FOR DIVERSION:

CALCULATIONS BASED ON LANDFILL GAS COLLECTED AT TOLAND AND SIMI LANDFILLS

1. Background Information:

2014	Baseline year
41.1%	% of total landfilled waste stream available for diversion and composting (FINAL 2014 Cal Recycle Waste Characterization Report - Disposal Facility Based)
205,113	2014 Available Divertable West County Waste (tons) - see 2. below
181,138	Proposed project diverted tons/year
88.3%	Correction factor proposed/available diverted waste

2. Calculation of landfil gas generated due to West County waste:

Cal Recycle Countywide Destination Detail for 2014 (see CalRecycle-CountywideDestinationDetail.xls for waste volume calculations):

2014 Total Waste Disposal (tons)	Waste Disposed from West County	Waste Disposed from East County	Total	% of waste from West County	2014 total landfill gas collected* (mmscf/day)	Landfill Gas Due to West County Waste (mmscf/d)
Toland	341,187	57,938	399,125	85%	2.26	1.93
Simi Valley	157,871	214,155	372,026	42%	5.49	2.33
Totals:	499,058	272,093	771,151			**4.26**

Tonnage check vs original Project Description:

CalRecycle % Divertable Waste	2014 Divertable West County Waste (tons)	2014 divertable tons from original P.D. calculations
41.1%	140,228	
41.1%	64,885	
	205,113	212,984

% of West County waste to Toland:	68.4%
% of West County waste to Simi:	31.6%

* EPA's Greenhouse Gas Reporting Program (GHGRP) - https://www.epa.gov/ghgreporting
*Facility Level Information on GreenHouse gases Tool (FLIGHT)
See EPA Landfill GHG Reporting - Toland and Simi 2014.xlsx
https://ghgdata.epa.gov/ghgp/main.do#

2014 Gas Collection Systems details - Toland

Annual Volume FGCollected Gas Volumetric Flow	824,985,804	(scf) Measured Value
	2.26	mmscf/day
	46.00%	Methane % reported

2014 Gas Collection Systems details - Simi Valley

Annual Volume FGCollected Gas Volumetric Flow	2,004,573,200	(scf) Measured Value
	5.49	mmscf/day
	48.68%	Methane % reported

3. Calculation of percentage of landfil gas generated by organic waste that is compostable and diveratble from landfills:

(based on Table 46: Composition of California's Overall Disposed Waste Stream Using Expanded Material Types found in FINAL 2014 Cal Recycle Waste Characterization Report - Disposal Facility Based)

WHAT % OF WASTE GENERATES LANDFILL GAS? (see Excel sheet *Profile for Landfill Gas Generating Waste_WARM.xlsx*)

(Note: specific waste composition mix for Toland & Simi not available from CalRecycle)

% of organics CalRecycle considers divertable:	41.1%
organic waste that generates 100% of landfill gas:	60.9%
% of gas created by divertable/compostable waste	**67.5%**

4. Calculation of baseline VOC emissions from landfills due to West County compostable materials planned for diversion:

Landfill gas collected in 2017 due to West County waste:	**4.26**	mmscf/day (see 2. above)
Gas collection system efficiency:	73.3%	Default AP42 2.4 DRAFT
Toland landfill gas emitted (not collected):	1.555	mmscf/day
Average percent methane in landfill gas (%):	47.90%	EPA's GHGRP - see 2. above
Methane gas not collected:	0.74	mmscf/day
Non-methane organics (NMOC) fraction (% by vol.):	**0.1306%**	2006 Toland flare source test inlet concentration
NMOC emissions:	0.00203	mmscf/day
% VOCs in NMOC (by volume):	**99.7%**	AP42 2.4 DRAFT for post 1992 landfills
VOC emitted:	0.00202	mmscf/day
VOC emitted:	2,023.6	scf/day
Assumed VOC density (as hexane):	0.2227	lb/ft3
Total VOC emissions from landfill gas:	450.67	VOC lb/day
	164,493	VOC lb/yr
	82.25	VOC ton/yr
% of landfill gas created by divertable compostables:	**67.5%**	see 3. above
Correction factor proposed/available diverted waste:	**88.3%**	see 1. above
Total baseline VOC emissions from landfill gas:	**98,037**	VOC lb/yr
	49.02	VOC ton/yr

SOURCES OF NMOC AND VOC DATA FOR LANDFILL GAS:

Table 2-1: Typical Landfill Gas Components

	% by Volume	Characteristics
methane	45–60	Methane is a naturally occurring gas. Landfills are the single largest source of U.S. man-made methane emissions.
carbon dioxide	40–60	Carbon dioxide is naturally found at small concentrations in the atmosphere (0.03%).
nitrogen	2–5	Nitrogen comprises approximately 79% of the atmosphere. It is odorless, tasteless, and colorless.
oxygen	0.1–1	Oxygen comprises approximately 21% of the atmosphere. It is odorless, tasteless, and colorless.
ammonia	0.1–1	Ammonia is a colorless gas with a pungent odor.
NMOCs	0.01–0.6	NMOCs are organic compounds (i.e., compounds that contain carbon). (Methane is an organic compound but is not considered an NMOC.) NMOCs may occur naturally or be formed by synthetic chemical processes. NMOCs most commonly found in landfills include acrylonitrile, benzene, 1,1-dichloroethane, 1,2-cis dichloroethylene, dichloromethane, carbonyl sulfide, ethyl-benzene, hexane, methyl ethyl ketone, tetrachloroethylene, toluene, trichloroethylene, vinyl chloride, and xylenes.
sulfides	0–1	Sulfides (e.g., hydrogen sulfide, dimethyl sulfide, mercaptans) are naturally occurring gases that give the landfill gas mixture its rotten-egg smell. Sulfides can cause unpleasant odors even at very low concentrations.
hydrogen	0–0.2	Hydrogen is an odorless, colorless gas.
carbon monoxide	0–0.2	Carbon monoxide is an odorless, colorless gas

Source: Tchobanoglous, Theisen, and Vigil 1993; EPA 1995

EPA LANDGEM MODEL:

0.40%	**EPA's Landgem CAA default NMOC in landfill gas (4,000 ppmv as hexane or 0.4%)**

Draft 2008 AP42 2.4 MUNICIPAL SOLID WASTE LANDFILLS - Tables 2.4-1 and 2.4-2 (NMOC reported as hexane)

landfill gas:	NMOC ppmv	VOC ppmv	% VOC in NMOC	EF Rating	
	595		39%	A	for landfills having a majority of the waste in place before 1992
	838	835	99.7%	A	for landfills having a majority of the waste in place on or after 1992
NMOC range (ppmv)	31 - 5,387				
EPA Landgem (ppmv)	4,000	% methane:	55%		

gas densities at STP	lb/ft3	
Benzene (C_6H_6)	0.20643	
Hexane (C_6H_{14})	0.2227	
Toluene (C_7H_8)	0.2435	
Xlene (C_8H_{10})	0.2858	vapor density 3.8 x air density
Air	0.07521	
Methane (CH_4)	0.04171	MW methane: 16.04
Ammonia (NH_3)	0.0448	MW hexane: 86.17

Toland VCAPCD Part 70 Annual Compliance Certification Report, 2/11/2010

2009 Source Test Summary Toland Landfill Table 3-2

Flare Inlet TGNMO as CH4 (ppmv):	7,820	
Conversion from as CH4 to as hexane:	5.99	from source test Table 3-2
Flare Inlet TGNMO as hexane (ppmv):	1,306	

Emissions Factors

Assumptions:

Drop points: Material receiving, processing, stockpile: Total of 5 drop points (a) 1-drop point at tipping floor; (b) 2-drop points transfer to trommel screen and screen to picking line; (c) 1 drop point out of grinder (d) 1 drop point at destination(windrow, CASP or AD).
Open windrow active and curing phase composting. Total of 2 drops for forming the compost pile from the ground material stockpile or for loading CASP or for loading AD.
Post composting, CASP and AD screening: 2 drops, one into screen, one out of screen
Finished compost storage and loadout operation: 2 drops, one to final product storage pile and one into sales delivery vehicle.
Controls - water sprays as needed. Incoming moisture content of feedsock is already high. Water sprays used during processing (see below). AD system is enclosed.

Screening: Generally no controls are used due to high feedstock moisture content - except for screening inside the food material building (building exhaust PM filter). Water sprays available throughout process if needed.

Grinding: Generally no controls are used due to high feedstock moisture content - except for grinding inside the food material building (building exhaust PM filter). Water sprays available throughout process if needed.

Post-Grind Compost Windrows: Piles are water sprayed to maintain moisture content of piles.

Material moisture content: Incoming green material: 25% Digestate out of AD: 45% CASP feedstock: 55% (taken from CASP research report) Correct
(D. Green email 9/30/36) Incoming food material: 85% Curing piles: 25%- 45% In CASP material: 43.3% (taken from CASP research report) Correct
Composting windrows: 25% - 45%

Assumed Baseline Landfill Emissions: Assume no processing and 2 drop points - from waste hauler truck to tipping location, from a loader to final disposition.

Emission Factors: (see Air Quality and Greenhouse Gas Technical Report, Tajiguas Landfill Resource Recovery Project Santa Barbara County, California, July 2014)

Process Fugitive PM - Drop points: From SJVAPCD "2006 Area Source Emissions Inventory Methodology, 199 – COMPOSTING WASTE DISPOSAL"
- use the AP-42 crushed stone emission factor (AP-42, Table 11.19.2-2) as a conservative estimate

uncontrolled emission factor:	0.0011	lb-PM10/ton (AP-42, Table 11.19.2-2)	
Control efficiency:	70%	water sprays (SJVAPCD & VCAPCD 2012 emissions inventory)	
controlled emission factor:	0.000330	lb-PM10/ton	
PM2.5 : PM10 ratio:	0.034	lb-PM2.5/lb-PM10 (assuming grain elevator fraction- SCAQMD CEIDARS "Methodology to Calculate Particulate Matter (PM) 2.5" October 2006	
controlled emission factor:	0.000011	lb-PM2.5/ton	

For drops in food material building assume 99% PM10 control due to use of particulate filter on building exhaust:
controlled emission factor: 0.00001 lb-PM10/ton
controlled emission factor: 0.0000004 lb-PM2.5/ton

Process Fugitive PM - Screening From AP-42, Table 11.19.2-2 Crushed Stone Processing and Pulverized Mineral Processing

uncontrolled emission factor:	0.0087	lb-PM10/ton
controlled emission factor:	0.00074	lb-PM10/ton - water sprays
controlled emission factor:	0.000050	lb-PM2.5/ton - water sprays

For screening in food material building assume 99% PM10 control due to use of particulate filter on building exhaust:
controlled emission factor: 0.00009 lb-PM10/ton
controlled emission factor: 0.0000059 lb-PM2.5/ton

Process Fugitive PM - Grinding: From BAAQMD District Permit Handbook, Section 11.13 Tub Grinders - emission factor for "Log Debarking" from a previous edition of AP-42, Table 10.3-1

uncontrolled emission factor:	0.024	lb-TSP/ton
uncontrolled emission factor:	0.0117432	lb-PM10/ton (48.93% of TSP - VCAPCD 2012 emissions inventory)
Control efficiency:	50%	water sprays (BAAQMD & VCAPCD 2012 emissions inventory)
controlled emission factor:	0.005872	lb-PM10/ton
PM2.5 : PM10 ratio:	0.708	lb-PM2.5/lb-PM10 (assuming wood product sawing fraction- SCAQMD CEIDARS "Methodology to Calculate Particulate Matter (PM) 2.5" October 2006
uncontrolled emission factor:	0.008314	lb-PM2.5/ton
controlled emission factor:	0.004157	lb-PM2.5/ton

For grinding in food material building assume 99% PM10 control due to use of particulate filter on building exhaust:
controlled emission factor: 0.00012 lb-PM10/ton
controlled emission factor: 0.00008 lb-PM2.5/ton

Process Fugitive PM - Compost Windrows Windrow PM10 stockpile wind blown emissions not addressed in Tajiguas Landfill air study. **Windrow turning treated like a drop point. Windrows turned 5 times during composting.**

Stockpile & Windrow Turning: From SJVAPCD "2006 Area Source Emissions Inventory Methodology, 199 – COMPOSTING WASTE DISPOSAL"
- PM10 emissions during the turning of the active phase windrows and forming of the curing phase windrows are assumed to be negligible due to the high moisture content of materials handled (moisture content is typically 40% to 65%).

On-site mobile vehicle dust emissions: Considers delivery vehicle travel only. Dust emissions from loader and other onsite mobile travel not considered because they move too slow.
For Project - on-site roads will be paved or cement treated (M. Harrison 10/7/16 email). For baseline all on-site roads are essentially unpaved (D. Green 10/7/16).

Unpaved Industrial Roads (AP42 13.2.2)

Baseline dust supression watering = as needed about once an hour minimum, 20,000 gallons per day (D. Green 10/10/16)

EF = $k * (s / 12)^a * (W / 3)^b$ or $k * (6.4/12)^{0.9} * (W / 3)^{0.45}$

k=	Constants (AP42)	k for PM10	1.5	k for PM2.5	0.15	
a, b =	Constants (AP42)	a=	0.9	b=	0.45	
s =	Silt content of unpaved surface in percent (%)			s =	6.4	AP42 for landfill - also mean for crushed gravel/limestone roads
W =	Average vehicle weight in tons			W =	vehicle specific (see tables below)	

SCAQMD CEQA Table XI-D unpaved road control factors:
84% Apply chemical dust suppressant annually
99% Pave unpaved roads

% control baseline = **84%** assuming 15 MPH limit, hourly watering plus high moisture retention of compost on roads inside facility is equivalent to chemical dust supression
% control project = **99%** assuming 15 MPH limit, cement treated roads, watering 3X daily, high moisture content of compost on roads inside facility nearly equivalent to paving

Assumed Baseline Landfill Emissions: Assume all waste delivery vehilces are HHD tractor trailers and onsite travel distance is from scale house to center of landfill.
8,800 (feet) 1.67 (miles) round trip distance from Toland scale house to center of landfill on existing landfill roads (Google Earth)
Assume paved roads (best case lowest emissions) and water used to supress dust.

Baseline Emissions

Process Fugitive PM: peak day factor: 110% mass reduction from composting: 50%

Parameter	Throughput (wet tons)			Days/year	# of drops	Emission Factor (lb/ton)		Fugitive PM Emissions: Annual (lb/year)		Average Day (lb/day)		Peak Day (lb/day)	
	Per year	Average Day	Peak Day			PM10	PM2.5	PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
Material receiving, processing, stockpile	113,862	365	401	312	5	0.000330	0.000011	188	6.4	0.60	0.020	0.66	0.02
Grinding - green & food material	113,862	365	401	312	1	0.005872	0.004157	669	473.3	2.14	1.517	2.36	1.67
Open windrow active and curing phase composting	113,862	365	401	312	2	0.000330	0.000011	75	2.6	0.24	0.008	0.26	0.01
Windrow turning	85,397	274	301	312	5	0.000330	0.000011	141	4.8	0.45	0.015	0.50	0.02
Screening process - post composting, CASP and AD	56,931	182	201	312	1	0.00074	0.000050	42	2.8	0.14	0.009	0.15	0.01
Screening drops	56,931	182	201	312	2	0.000330	0.000011	38	1.3	0.12	0.004	0.13	0.00
Finished compost storage and loadout operation	56,406	217	239	260	2	0.000330	0.000011	37	1.3	0.14	0.005	0.16	0.01
							TOTALS:	**1,189**	**492**	**3.8**	**1.6**	**4.2**	**1.7**

On-Site Motor Vehicle Fugitive PM:

Vehicle	Use	Route	Trip Count: Annual (#/yr)	Trip Count: Daily (#/day)	Distance (Miles/trip)	Daily VMT (Miles/day)	Avg Weight (tons)[1]	Days/year	Emission Factor (lb/mile): PM10	Emission Factor (lb/mile): PM2.5	Control (%)	Emissions (lb/year): PM10	Emissions (lb/year): PM2.5	Emissions (lb/day): PM10	Emissions (lb/day): PM2.5
HHD Solid Waste Collection Truck	Feedstock Delivery	Entrance-Tipping	6,576	21.1	0.24	5.05	20.4	312	2.02	0.20	84%	508	50.8	1.63	0.16
HHD Fleet Truck from MRFs	Feedstock Delivery	Entrance-Tipping	3,061	9.8	0.24	2.35	23.0	312	2.13	0.21	84%	250	25.0	0.80	0.08
Light Duty Truck - Business/Self Haul	Feedstock Delivery	Entrance-Tipping	7,520	24.1	0.24	5.77	3.5	312	0.92	0.09	84%	264	26.4	0.85	0.08
HHD Fleet - Roll off	Feedstock Delivery	Entrance-Tipping	1,204	3.9	0.24	0.92	17.4	312	1.88	0.19	84%	87	8.7	0.28	0.03
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	Resale Delivery	Entrance-Sales Yard	690	2.7	0.19	0.50	22.5	260	2.11	0.21	84%	44	4.4	0.17	0.02
HHD Fleet Truck - Finished Compost, Mulch, etc.	Outgoing Sales	Sales Yard-Entrance	5,446	20.9	0.45	9.32	19.1	260	1.96	0.20	84%	761	76.1	2.93	0.29
Light Duty Truck	Outgoing Sales	Sales Yard-Entrance	2,172	8.4	0.45	3.72	2.8	260	0.82	0.08	84%	127	12.7	0.49	0.05
Avoided Landfill Trips- HHD from MRF	Trash to Landfill	@ Toland Landfill	10,158	27.8	1.67	46.38	23.9	365	2.17	0.22	84%	5871	587.1	16.09	1.61
1 - average of loaded & empty vehicle		**Totals:**	**36,827**	**119**		**74**					**Totals:**	**7,912**	**791**	**23.22**	**2.32**

Project Emissions

Process Fugitive PM: peak day factor: 110%

Parameter	Throughput (wet tons)			Days/year	# of drops	Emission Factor (lb/ton)		Fugitive PM Emissions: Annual (lb/year)		Average Day (lb/day)		Peak Day (lb/day)	
	Per year	Average Day	Peak Day			PM10	PM2.5	PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
Material receiving, processing, stockpile - green	229,500	883	971	260	5	0.000330	0.000011	379	12.87	1.46	0.05	1.60	0.05
Material receiving, processing, stockpile - food	65,500	252	277	260	5	0.00001	0.0000004	4	0.12	0.01	0.00	0.02	0.00
Screening - green material building	229,500	629	692	365	1	0.00074	0.000050	170	11.48	0.47	0.03	0.51	0.03
Screening - food material building	65,500	179	197	365	1	0.00009	0.0000059	6	0.39	0.02	0.00	0.02	0.00
Grinding - green material building	229,500	629	692	365	1	0.005872	0.004157	1,348	954.05	3.69	2.61	4.06	2.88
Grinding - food material building	65,500	179	197	365	1	0.00012	0.00008	8	5.45	0.02	0.01	0.02	0.02
Open windrow active and curing phase composting	256,350	702	773	365	2	0.000330	0.000011	169	5.75	0.46	0.02	0.51	0.02
Windrow turning	256,350	702	773	365	5	0.000330	0.000011	423	14.38	1.16	0.04	1.27	0.04
Screening processs-post composting, CASP and AD	134,968	370	407	365	1	0.000330	0.000011	45	1.51	0.12	0.00	0.13	0.00
Screening drops - post composting, CASP and AD	134,968	370	407	365	2	0.000330	0.000011	89	3.03	0.24	0.01	0.27	0.01
Finished compost storage and loadout operation	134,968	519	571	260	2	0.000330	0.000011	89	3.03	0.34	0.01	0.38	0.01
							TOTALS:	**2,728**	**1,012**	**8.0**	**2.8**	**8.8**	**3.1**

On-Site Motor Vehicle Fugitive PM:

Vehicle	Use	Route	Trip Count: Annual (#/yr)	Trip Count: Daily (#/day)	Distance (Miles/trip)	Daily VMT (Miles/day)	Avg Weight (tons)[1]	Days/year	Emission Factor (lb/mile): PM10	Emission Factor (lb/mile): PM2.5	Control (%)	Emissions (lb/year): PM10	Emissions (lb/year): PM2.5	Emissions (lb/day): PM10	Emissions (lb/day): PM2.5
HHD Solid Waste Collection Truck	Feedstock Delivery	Entrance-Tipping	19,000	73.1	0.73	53.40	20.5	260	2.02	0.20	99%	281	28.1	1.08	0.11
HHD Fleet Truck from MRFs	Feedstock Delivery	Entrance-Tipping	6,225	23.9	0.73	17.50	23.9	260	2.17	0.22	99%	99	9.9	0.38	0.04
Light Duty Truck - Business/Self Haul	Feedstock Delivery	Entrance-Tipping	32,159	123.7	0.73	90.39	3.3	260	0.89	0.09	99%	210	21.0	0.81	0.08
HHD Fleet - Roll off	Feedstock Delivery	Entrance-Tipping	1,439	5.5	0.73	4.05	17.5	260	1.88	0.19	99%	20	2.0	0.08	0.01
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	Resale Delivery	Entrance-Sales Yard	1,788	6.9	0.30	2.08	22.5	260	2.11	0.21	99%	11	1.1	0.04	0.00
HHD Fleet Truck - Finished Compost, Mulch, etc.	Outgoing Sales	Sales Yard-Entrance	15,960	61.4	0.45	27.90	19.1	260	1.96	0.20	99%	142	14.2	0.55	0.05
Light Duty Truck	Outgoing Sales	Sales Yard-Entrance	6,365	24.5	0.45	11.13	2.8	260	0.82	0.08	99%	24	2.4	0.09	0.01
1 - average of loaded & empty vehicle		**Totals:**	**82,937**	**319**		**206**					**Totals:**	**786**	**79**	**3.0**	**0.3**

Project Increment Emissions

	Avg. Annual Emissions (lbs/year)		Avg. Day Emissions (lbs/day)		Peak Day Emissions (lbs/day)	
	PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
Incremental Process Fugitive PM:	1,538	520	4.16	1.21	4.58	1.33
Incremental On-Site Motor Vehicle Fugitive PM:	-7,125	-713	-20.20	-2.02	-22.22	-2.22
Total Fugitive PM Project Increment:	**-5,587**	**-193**	**-16**	**-0.8**	**-18**	**-0.9**

Based on Cornerstone VCAPCD ATC Application (Sept. 2012) & VCAPCD Engineering Analysis (4/9/2013):

5,000 ton/year material processed assumed in 2012/2013 analysis

Assumptions:

The anaerobioc digester is enclosed. Emissions are collected and treated in the biogas treatment system. No fugitive emissions.

67% green waste and 33% food waste — a single 3.2 MMBtu/hr flare will handle all waste gas

3,000 Biogas production ft3/ton (ZWE estimates — 40,000 tons/year of material processed

600 Biogas energy content btu/ft3 — 1050 APCD btu/ft3 for pipeline natural gas

60% methane content of biogas

8,760 hrs/year max.

Engine - 100kW (145 kW thermal) 2G Cenergy Technologies model 2G 100BG:

100 kW generated

147 BHP

27 ft3/min fuel consumption

14,191,200 ft3/year fuel consumption based on max. hours

229 ft3/min exhaust gas flow

356 °F exhaust gas temperature

Enclosed Emergency Backup Flare (used during engine maintenance, biogas is processed through a carbon filter pre-treatment system for hydrogen sulfide (H2S) and SOx control:

3.2 MMBtu/hr — 60% max. methane content of biogas (flared gas is same as biogas produced)

88 ft3/min fuel consumption max. — 2.11 MMcf/yr based on max. hours

400 max. hrs per year — 99.5% flare ROC control

biogas is processed through a carbon filter pre-treatment system for hydrogen sulfide (H2S) and SOx control

Biofilter, for control of odors from digesters during start-up and termination exhausts (at process termination methane decreases for 20% to 1% methane):

ROC emissions from the biofilter are considered negligible. This is consistent with how the District permits wastewater treatment plants.

Emergency Backup Generator/Diesel Engine (exempt from permit- Rule 23.D.6):

9.38 BHP

Scale up calculations:

120,000,000 expected ft3/year total biogas generated

72,000,000 expected ft3/year total treated biogas (methane) burned in all engines

14,191,200 max. ft3/year of gas burned by one engine

5 # of engines required to burn all gas - used to ratio up emissions from a single engine

AD Engine (2G-Cynergy Lean Biogas Engine)

	Emission Factor (g/BHP-hr) [1]						lb/MMscf
	ROC	NOx	CO	PM [2]	PM2.5 [3]	SO2 [4]	CO2e [5]
AD Engine	0.19	1.00	1.5	0.017	0.016	0.03	247

1 - Emission factors from VCAPCD 4/9/13 as provided by 2G Cenergy

2 - Total PM assumed to be equal to PM10.

3 - PM2.5 emissions factor assumed to be 92% of PM10 based on SCAQMD's *Updated CEIDARS Table with PM2.5 Fractions* for offroad equipment.

4 - SOx emission factor based on 20 ppm H2S in the biogas.

5 - AP42 Table 1.4-2

CO2e emission factor:	lb/MMscf	GWP	Adjusted	
CO2	120000.0	1	120000	
CH4	2.3	21	48.3	
N20	0.64	310	198.4	
		Anthropogenic Gas	120247	lb/MMscf
		Biogenic gas	247	lb/MMscf

	Emissions (lb/hr)							Emissions (ton/year) [1]						
	ROC	NOx	CO	PM	PM2.5	SO2	CO2e	ROC	NOx	CO	PM	PM2.5	SO2	CO2e (MT)
AD Engine	0.31	1.62	2.43	0.03	0.03	0.05	2.0	1.35	7.09	10.64	0.12	0.11	0.21	8.06

1 - Assuming 8,760 hours/year

Backup Flare Emissions:

	Emission Factor (lb/MMBtu) [1]					
	ROC	NOx	CO	PM [2]	PM2.5 [3]	SO2 [4]
Backup Flare	0.0518	0.0680	0.3700	0.0050	0.0046	0.006

1 - Emission factors from VCAPCD 4/9/13 - VCAPCD default factors for waste gas flares

2 - Total PM assumed to be equal to PM10.

3 - PM2.5 emissions factor assumed to be 92% of PM10

4 - SOx emission factor based on 20 ppm H2S in the biogas.

SOx emission factor [g/scf] = 20 [ppmv sulfur] x 10^{-6} x 64 [lb/lb-mole SO2] / 385.5 [scf/lb-mole] x 453.6 g/lb

0.00151 g/scf

0.0000025 g/btu @ 600 btu/ft3

0.000000006 lb/btu

0.006 lb/MMbtu

	Emissions (lb/hr)							Emissions (ton/year) [1]						
	ROC	NOx	CO	PM [2]	PM2.5 [3]	SO2 [4]	CO2e	ROC	NOx	CO	PM	PM2.5	SO2	CO2e (MT)
Backup Flare	0.17	0.22	1.18	0.02	0.01	0.02	1.3	0.03	0.04	0.24	0.003	0.003	0.004	0.24

1 - Assuming 400 hours/year

Emissions Factors

Equipment Information							Base EF (g/hp-hr) [1]							Location
Equipment	**Type**	**Model**	**HP**	**Engine Year**	**Tier**	**Hours/Day**	**NMHC+NOx**	**THC**	**NOx**	**CO**	**PM**	**PM2.5**	**CO2e**	
Baseline														
CATERPILLAR	Excavators	320CL	138	2004	T2	7.5	4.9	0.25	4.66	3.7	0.22	0.202	539.9	Ox
MANITOU	Forklifts	TMT315FL	25	2006	T2	7.5	5.60	0.28	5.32	4.10	0.45	0.414	539.9	Ox
CATERPILLAR	Rubber Tired Loaders	950G	183	2003	T2	7.5	4.90	0.25	4.66	2.60	0.15	0.138	539.9	SP
CATERPILLAR	Rubber Tired Loaders	950G II	183	2005	T2	7.5	4.90	0.25	4.66	2.60	0.15	0.138	539.9	SP
CATERPILLAR	Rubber Tired Loaders	950G	183	2003	T2	7.5	4.90	0.25	4.66	2.60	0.15	0.138	539.9	SP
CATERPILLAR	Rubber Tired Loaders	950H	196	2006	T3	7.5	3.00	0.15	2.85	2.60	0.15	0.138	539.9	Ox
CATERPILLAR	Rubber Tired Loaders	950G	183	2003	T2	7.5	4.90	0.25	4.66	2.60	0.15	0.138	539.9	Ox
CATERPILLAR	Rubber Tired Loaders	950GII	183	2004	T2	7.5	4.90	0.25	4.66	2.60	0.15	0.138	539.9	Ox
CATERPILLAR	Rubber Tired Loaders	950G II	183	2004	T2	7.5	4.90	0.25	4.66	2.60	0.15	0.138	539.9	Ox
CATERPILLAR	Rubber Tired Loaders	950G	207	2004	T2	7.5	4.90	0.25	4.66	2.60	0.15	0.138	539.9	Ox
CATERPILLAR	Rubber Tired Loaders	950G II	183	2004	T2	7.5	4.90	0.25	4.66	2.60	0.15	0.138	539.9	Ox
CATERPILLAR	Skid Steer Loaders	256C	74	2007	T2	7.5	5.60	0.28	5.32	3.70	0.30	0.276	539.9	Ox
CATERPILLAR	Skid Steer Loaders	242B3	71	2012	T4I	7.5	3.50	0.18	3.33	3.70	0.22	0.202	539.9	Ox
NEW HOLLAND	Backhoes	7810	75	1986	T0	4	N/A	1.30	6.00	15.50	0.60	0.552	539.9	SP
NEW HOLLAND	Backhoes	7810	75	1987	T0	4	N/A	1.30	6.00	15.50	0.60	0.552	539.9	SP
Int'l MaxxForce 13	Water Truck	---	475	2009	---	6.5	1.2	0.06	1.14	15.5	0.01	0.009	539.9	Ox
Navistar E210	Dump Truck	---	210	1992	---	6.5	N/A	1.20	5.00	15.50	0.25	0.230	539.9	Ox
Water Truck	Water Truck	---	475	2004	---	6.5	2.5	0.125	2.375	15.5	0.1	0.092	539.9	SP
Dump Truck	Dump Truck	---	210	2010	---	4.0	N/A	0.14	0.20	15.50	0.01	0.009	539.9	SP
MOORBARK	Grinder	1300A	860	2006	T2	6.5	4.80	0.24	4.56	2.60	0.15	0.138	539.9	SP
MORBARK	Grinder	6600 WOODHOG	650	2005	T2	6.5	4.80	0.24	4.56	2.60	0.15	0.138	539.9	Ox
Powerscreen	Screen	3300	275	2010	T3	6.5	3.00	0.15	2.85	2.60	0.15	0.138	539.9	Ox
CEC	Screen	5x12	91	2010	T3	6.5	3.50	0.18	3.33	3.70	0.30	0.276	539.9	Ox
CEC	Screen	5X12	91	2010	T3	6.5	3.50	0.18	3.33	3.70	0.30	0.276	539.9	Ox
WILDCAT	Screen	521	99	2012	T4	6.5	N/A	0.14	0.3	3.70	0.015	0.014	539.9	Ox
WILDCAT	Screen	626	125	2012	T4	6.5	N/A	0.14	0.3	3.70	0.015	0.014	539.9	Ox
WILDCAT	Screen	626	125	2012	T4	6.5	N/A	0.14	0.3	3.70	0.015	0.014	539.9	SP
WILDCAT	Screen	626	125	2012	T4	6.5	N/A	0.14	0.3	3.70	0.015	0.014	539.9	SP
Project														
CATERPILLAR	Wheel Loader	950K	211	2019	T4F	7.5	N/A	0.14	0.3	2.6	0.015	0.014	539.9	SP
CATERPILLAR	Wheel Loader	950K	211	2019	T4F	7.5	N/A	0.14	0.3	2.6	0.015	0.014	539.9	SP
CATERPILLAR	Wheel Loader	950K	211	2019	T4F	7.5	N/A	0.14	0.3	2.6	0.015	0.014	539.9	SP
CATERPILLAR	Wheel Loader	950K	211	2019	T4F	7.5	N/A	0.14	0.3	2.6	0.015	0.014	539.9	SP
CATERPILLAR	Wheel Loader	950K	211	2019	T4F	7.5	N/A	0.14	0.3	2.6	0.015	0.014	539.9	SP
CATERPILLAR	Wheel Loader	950K	211	2019	T4F	7.5	N/A	0.14	0.3	2.6	0.015	0.014	539.9	SP
CATERPILLAR	Skid Steer Loader	242B Series 3	71	2019	T4F	7.5	3.5	0.18	3.33	3.7	0.022	0.020	539.9	SP
SCARAB	Windrow Turner	Model 27	630	2019	T4F	7.5	N/A	0.14	0.3	2.6	0.015	0.014	539.9	SP
Freightliner	Water Truck - Diesel	FL110	375	2010	---	7.5	N/A	0.14	0.20	15.5	0.01	0.009	539.9	SP
Freightliner	Dump Truck - Diesel	FL110	375	2010	---	7.5	N/A	0.14	0.20	15.5	0.01	0.009	539.9	SP
Toyota	Forklift	8FGU30	51	2010	T3	7.5	3.5	0.175	3.325	3.7	0.3	0.276	539.9	SP
Toyota	Forklift	8FGU30	51	2010	T3	7.5	3.5	0.175	3.325	3.7	0.3	0.276	539.9	SP
MORBARK	Grinder - green	4600XL	1050	2013	T4i	6.5	N/A	0.3	2.6	2.6	0.075	0.069	539.9	SP
MORBARK	Grinder	6600 WOODHOG	650	2005	Electrified	7.5	0	0	0	0	0	0	0	SP
CEC	Screen-It	6X16	97	2010	T3	6.5	3.5	0.175	3.325	3.7	0.3	0.276	539.9	SP
CEC	Screen-It	6X16	97	2010	T3	6.5	3.5	0.175	3.325	3.7	0.3	0.276	539.9	SP
Wildcat	Screen	626	140	2012	Electrified	6.5	0	0	0	0	0	0	0	SP
Wildcat	Screen	626	140	2012	Electrified	6.5	0	0	0	0	0	0	0	SP
Wildcat	Screen	626	140	2012	Electrified	6.5	0	0	0	0	0	0	0	SP

1 - Emission factors assumed the same as emission standards - for both off-road and on-road used off road.

Where standard is for NMHC+NOx emissions assumed to be 5 percent ROC and 95 percent NOx, from Table D-25 of 2011 Carl Moyer Program Guidelines - http://www.arb.ca.gov/msprog/moyer/guidelines/current.htm

CO2e emission factor (includes CO2, N2O, and CH4) based on TCR's "2015 Climate Registry Default Emission Factors" and the brake specific fuel consumption of 0.367 lb/hp-hr from OFFROAD2011.

PM2.5 emissions factor assumed to be 92% of PM10 based on SCAQMD's *Updated CEIDARS Table with PM2.5 Fractions* for offroad equipment.

Total PM assumed to be equal to PM10.

Load factors (below) based on the California Air Resources Board's OFFROAD2011 model documentation (see attached) or from Table D-10 of 2011 Carl Moyer Program Guidelines

Baseline Emissions

Material processing: 312 days/year

Equipment Information						Peak Year Emis. (MT/yr)	Emissions (lb/day)					Santa Paula Emissions for HRA (lbs/day)		
Equipment	**Type**	**Horsepower**	**Load Factor**	**Hours/Year**	**Hours/Day**	**CO2e**	**ROC**	**NOx**	**CO**	**PM10**	**PM2.5**	**Location**	**ROC**	**PM10**
CATERPILLAR	Excavators	138	0.38	2,340	7.5	66.2	0.21	4.03	3.21	0.19	0.18	Ox	0	0
MANITOU	Forklifts	25	0.2	2,340	7.5	6.3	0.02	0.44	0.34	0.04	0.03	Ox	0	0
CATERPILLAR	Rubber Tired Loaders	183	0.36	2,340	7.5	83.2	0.27	5.07	2.83	0.16	0.15	SP	0.27	0.16
CATERPILLAR	Rubber Tired Loaders	183	0.36	2,340	7.5	83.2	0.27	5.07	2.83	0.16	0.15	SP	0.27	0.16
CATERPILLAR	Rubber Tired Loaders	183	0.36	2,340	7.5	83.2	0.27	5.07	2.83	0.16	0.15	SP	0.27	0.16
CATERPILLAR	Rubber Tired Loaders	196	0.36	2,340	7.5	89.1	0.17	3.32	3.03	0.17	0.16	Ox	0	0
CATERPILLAR	Rubber Tired Loaders	183	0.36	2,340	7.5	83.2	0.27	5.07	2.83	0.16	0.15	Ox	0	0
CATERPILLAR	Rubber Tired Loaders	183	0.36	2,340	7.5	83.2	0.27	5.07	2.83	0.16	0.15	Ox	0	0
CATERPILLAR	Rubber Tired Loaders	183	0.36	2,340	7.5	83.2	0.27	5.07	2.83	0.16	0.15	Ox	0	0
CATERPILLAR	Rubber Tired Loaders	207	0.36	2,340	7.5	94.1	0.30	5.73	3.20	0.18	0.17	Ox	0	0
CATERPILLAR	Rubber Tired Loaders	183	0.36	2,340	7.5	83.2	0.27	5.07	2.83	0.16	0.15	Ox	0	0
CATERPILLAR	Skid Steer Loaders	74	0.37	2,340	7.5	34.6	0.13	2.41	1.67	0.14	0.12	Ox	0	0
CATERPILLAR	Skid Steer Loaders	71	0.37	2,340	7.5	33.2	0.08	1.44	1.61	0.10	0.09	Ox	0	0
NEW HOLLAND	Backhoes	75	0.37	1,248	4.0	18.7	0.32	1.47	3.79	0.15	0.13	SP	0.32	0.15
NEW HOLLAND	Backhoes	75	0.37	1,248	4.0	18.7	0.32	1.47	3.79	0.15	0.13	SP	0.32	0.15
Int'l MaxxForce 13	Water Truck	475	0.38	2,028	6.5	197.5	0.16	2.95	40.06	0.03	0.02	Ox	0	0
Navistar E210	Dump Truck	210	0.38	2,028	6.5	87.3	1.37	5.71	17.71	0.29	0.26	Ox	0	0
Water Truck	Water Truck	475	0.38	2,028	6.5	197.5	0.32	6.14	40.06	0.26	0.24	SP	0.32	0.26
Dump Truck	Dump Truck	210	0.38	1,248	4.0	53.7	0.10	0.14	10.90	0.01	0.01	SP	0.10	0.01
MOORBARK	Grinder	860	0.4	2,028	6.5	376.3	1.18	22.46	12.81	0.74	0.68	SP	1.18	0.74
MORBARK	Grinder	650	0.4	2,028	6.5	284.4	0.89	16.97	9.68	0.56	0.51	Ox	0	0
Powerscreen	Screen	275	0.4	2,028	6.5	120.3	0.24	4.49	4.09	0.24	0.22	Ox	0	0
CEC	Screen	91	0.4	2,028	6.5	39.8	0.09	1.73	1.93	0.16	0.14	Ox	0	0
CEC	Screen	91	0.4	2,028	6.5	39.8	0.09	1.73	1.93	0.16	0.14	Ox	0	0
WILDCAT	Screen	99	0.4	2,028	6.5	43.3	0.08	0.17	2.10	0.01	0.01	Ox	0	0
WILDCAT	Screen	125	0.4	2,028	6.5	54.7	0.10	0.21	2.65	0.01	0.01	Ox	0	0
WILDCAT	Screen	125	0.4	2,028	6.5	54.7	0.10	0.21	2.65	0.01	0.01	SP	0.10	0.01
WILDCAT	Screen	125	0.4	2,028	6.5	54.7	0.10	0.21	2.65	0.01	0.01	SP	0.10	0.01
					Total:	**2,546.78**	**8.24**	**118.91**	**189.64**	**4.72**	**4.34**		**3.24**	**1.81**
							ROC	**NOx**	**CO**	**PM10**	**PM2.5**			

Post-Project Total Emissions

Material processing: 365 days/year

Equipment Information						Peak Year Emis. (MT/yr)	Emissions (lb/day)				
Equipment	**Type**	**Horsepower**	**Load Factor**	**Hours/Year**	**Hours/Day**	**CO2e**	**ROC**	**NOx**	**CO**	**PM10**	**PM2.5**
CATERPILLAR	Wheel Loader	211	0.36	2,738	7.5	112.2	0.18	0.38	3.26	0.02	0.02
CATERPILLAR	Wheel Loader	211	0.36	2,738	7.5	112.2	0.18	0.38	3.26	0.02	0.02
CATERPILLAR	Wheel Loader	211	0.36	2,738	7.5	112.2	0.18	0.38	3.26	0.02	0.02
CATERPILLAR	Wheel Loader	211	0.36	2,738	7.5	112.2	0.18	0.38	3.26	0.02	0.02
CATERPILLAR	Wheel Loader	211	0.36	2,738	7.5	112.2	0.18	0.38	3.26	0.02	0.02
CATERPILLAR	Wheel Loader	211	0.36	2,738	7.5	112.2	0.18	0.38	3.26	0.02	0.02
CATERPILLAR	Skid Steer Loader	71	0.37	2,738	7.5	38.8	0.08	1.44	1.61	0.01	0.01
SCARAB	Windrow Turner	630	0.4	2,738	7.5	372.1	0.58	1.25	10.82	0.06	0.06
Freightliner	Water Truck - Diesel	375	0.38	2,738	7.5	210.4	0.33	0.47	36.49	0.02	0.02
Freightliner	Dump Truck - Diesel	375	0.38	2,738	7.5	210.4	0.33	0.47	36.49	0.02	0.02
Toyota	Forklift	51	0.2	2,738	7.5	15.1	0.03	0.56	0.62	0.05	0.05
Toyota	Forklift	51	0.2	2,738	7.5	15.1	0.03	0.56	0.62	0.05	0.05
MORBARK	Grinder - green	1050	0.4	2,373	6.5	537.5	1.80	15.63	15.63	0.45	0.41
MORBARK	Grinder	650	0.4	2,738	7.5	0	0	0	0	0	0
CEC	Screen-It	97	0.4	2,373	6.5	49.7	0.10	1.85	2.06	0.17	0.15
CEC	Screen-It	97	0.4	2,373	6.5	49.7	0.10	1.85	2.06	0.17	0.15
Wildcat	Screen	140	0.4	2,373	6.5	0	0	0	0	0	0
Wildcat	Screen	140	0.4	2,373	6.5	0	0	0	0	0	0
Wildcat	Screen	140	0.4	2,373	6.5	0	0	0	0	0	0
					Total:	**2,171.63**	**4.43**	**26.34**	**125.97**	**1.12**	**1.03**

Project Increment Emissions

Parameter	Peak Year Emis. (MT/yr)	Peak Day Emissions (lb/day)				
	CO2e	**ROC**	**NOx**	**CO**	**PM10**	**PM2.5**
Baseline	2,546.8	8.24	118.91	189.64	4.72	4.34
Project	2,171.6	4.43	26.34	125.97	1.12	1.03
Project Increment:	**-375.15**	**-3.81**	**-92.57**	**-63.67**	**-3.60**	**-3.31**

Emissions Factors (g/VMT)

Vehicle Information		Baseline 2016 Emission Factors (g/VMT)							
Vehicle Type	**Fuel Type**	**ROC**	**CO**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CO2e**
HHD Solid Waste Collection Truck (Diesel)	Diesel	0.3939	**5.066**	13.14	0.0254	0.0168	0.0161	4,170.0	4,378.4
HHD Solid Waste Collection Truck (CNG)	CNG	0.1249	3.237	6.57	0.0127	0.0017	0.0016	---	418.6
HHD Fleet Truck (Diesel)	Diesel	0.2321	1.026	6.70	0.0159	0.0902	0.0863	1,724.7	1,810.9
Light Duty Truck (Gasoline)	Gasoline	0.0297	1.261	0.15	0.0042	0.0017	0.0016	416.2	437.0
Light Duty Truck (Diesel)	Diesel	0.0186	0.146	0.07	0.0035	0.0066	0.0063	371.1	389.7
Passenger Cars (Gasoline)	Gasoline	0.0271	1.017	0.10	0.0031	0.0018	0.0017	310.5	326.0

Vehicle Information		Project 2019 Emission Factors (g/VMT)							
Vehicle Type	**Fuel Type**	**ROC**	**CO**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2**	**CO2e**
HHD Solid Waste Collection Truck (Diesel)	Diesel	0.3165	**7.319**	9.95	0.0194	0.0133	0.0127	3,916.7	4,112.6
HHD Solid Waste Collection Truck (CNG)	CNG	0.1003	4.677	4.97	0.0097	0.0013	0.0013	---	418.6
HHD Fleet Truck (Diesel)	Diesel	0.1374	0.793	4.68	0.0152	0.0324	0.0310	1,662.2	1,745.3
Light Duty Truck (Gasoline)	Gasoline	0.0183	0.892	0.10	0.0038	0.0018	0.0016	384.0	403.2
Light Duty Truck (Diesel)	Diesel	0.0175	0.149	0.05	0.0034	0.0055	0.0053	351.1	368.7
Passenger Cars (Gasoline)	Gasoline	0.0146	0.716	0.07	0.0029	0.0019	0.0017	285.9	300.2

Diesel and gasoline emissions factors are from the EMFAC2011 web tool, utilizng the following assumptions (except where specifically identified as otherwise below): Ventura County, 2019, annual average, combined model year, combined speeds, and the CO2 EF includes the LCFS.

HHD Solid Waste Collection Truck = T7 SWCV vehicle type, diesel

HHD Fleet Truck = HHDT vehicle type (aggregate), diesel

Light Duty Truck = LDT2 vehicle type, diesel and gasoline

Passenger Cars = LDA vehicle type, gasoline

CO2e emissions factor determined by scaling CO2 factor up by 5%, per the methodologies found in the BAAQMD GHG Model (BGM). This accounts for emissions of CH4, N2O, and air conditioner evaporative loss.

CNG Emissions factor (except for CO2e) based on the diesel emissions factors for the same category from EMFAC2011 multiplied by the following diesel to CNG modifiers, which are the bus modifiers from "Emissions of Criteria Pollutants, Toxic Air Pollutants, and Greenhouse Gases, from the Use of Alternative Transportation Modes and Fuels", Institute of Transportation Studies, UC Davis, last updated in 2006. SOx emissions factor is assumed to be half of the diesel factor.

ROC = 0.317	NOx= 0.5	PM10= 0.1
CO= 0.639	SOx= 0.5	PM2.5= 0.1

CNG emissions factor for CO2e (includes CO2, N2O, and CH4) based on TCR's "2014 Climate Registry Default Emissions Factors" and fuel efficiency of 44.8 miles/MMBtu.

Baseline Emissions

Vehicle Type	Baseline VMT		Peak Year Emissions	Peak Day Emissions (lb/day)					
	Peak Year	**Peak Day**	**CO2e (MT/y)**	**ROC**	**NOx**	**CO**	**PM10**	**PM2.5**	**SOx**
HHD Solid Waste Collection Truck (Diesel)	390,009	1,618	1,706.1	1.40	46.83	18.05	0.06	0.06	0.09
HHD Solid Waste Collection Truck (CNG)	260,006	1,079	108.7	0.30	15.62	7.69	0.00	0.00	0.03
HHD Fleet Truck (Diesel)	681,015	3,221	1,232.2	1.65	47.50	7.28	0.64	0.61	0.11
Light Duty Truck (Gasoline)	101,468	391	44.3	0.03	0.13	1.09	0.00	0.00	0.00
Light Duty Truck (Diesel)	101,468	391	39.5	0.02	0.06	0.13	0.01	0.01	0.00
Passenger Cars (Gasoline)	264,160	980	86.0	0.06	0.21	2.20	0.00	0.00	0.01
Total Haul:	**1,533,966**	**6,700**	**3,130.8**	**3.39**	**110.15**	**34.23**	**0.71**	**0.68**	**0.24**
Total Worker:	**264,160**	**980**	**86.0**	**0.06**	**0.21**	**2.20**	**0.00**	**0.00**	**0.01**
Total Overall:	**1,798,126**	**7,680**	**3,216.9**	**3.45**	**110.36**	**36.43**	**0.71**	**0.68**	**0.25**

Post-Project Total Emissions

Vehicle Type	Post-Project Total VMT		Peak Year Emissions	Peak Day Emissions (lb/day)					
	Peak Year	**Peak Day**	**CO2e (MT/y)**	**ROC**	**NOx**	**CO**	**PM10**	**PM2.5**	**SOx**
HHD Solid Waste Collection Truck (Diesel)	282,263	1,218	1,159.8	0.85	26.69	19.63	0.04	0.03	0.05
HHD Solid Waste Collection Truck (CNG)	188,175	812	78.7	0.18	8.90	8.36	0.00	0.00	0.02
HHD Fleet Truck (Diesel)	650,459	3,102	1,134.2	0.94	32.01	5.42	0.22	0.21	0.10
Light Duty Truck (Gasoline)	474,506	2,032	191.2	0.08	0.45	3.99	0.01	0.01	0.02
Light Duty Truck (Diesel)	474,506	2,032	174.8	0.08	0.24	0.67	0.02	0.02	0.02
Passenger Cars (Gasoline)	322,400	1,380	96.7	0.04	0.20	2.18	0.01	0.01	0.01
Total Haul:	**2,069,909**	**9,196**	**2,738.7**	**2.13**	**68.29**	**38.07**	**0.29**	**0.28**	**0.21**
Total Worker:	**322,400**	**1,380**	**96.7**	**0.04**	**0.20**	**2.18**	**0.01**	**0.01**	**0.01**
Total Overall:	**2,392,309**	**10,576**	**2,835.4**	**2.17**	**68.49**	**40.25**	**0.30**	**0.28**	**0.21**

Project Increment Emissions

Vehicle Type	Project Increment VMT		Peak Year Emissions	Peak Day Emissions (lb/day)					
	Peak Year	**Peak Day**	**CO2e (MT/y)**	**ROC**	**NOx**	**CO**	**PM10**	**PM2.5**	**SOx**
HHD Solid Waste Collection Truck (Diesel)	-107,746	-400	-546.3	-0.55	-20.15	1.58	-0.02	-0.02	-0.04
HHD Solid Waste Collection Truck (CNG)	-71,831	-267	-30.0	-0.12	-6.72	0.67	0.00	0.00	-0.01
HHD Fleet Truck (Diesel)	-30,556	-119	-98.0	-0.71	-15.49	-1.86	-0.42	-0.40	-0.01
Light Duty Truck (Gasoline)	373,038	1,641	146.9	0.06	0.31	2.91	0.01	0.01	0.01
Light Duty Truck (Diesel)	373,038	1,641	135.3	0.06	0.18	0.54	0.02	0.02	0.01
Passenger Cars (Gasoline)	58,240	400	10.6	-0.01	-0.01	-0.02	0.00	0.00	0.00
Total Haul:	**535,943**	**2,496**	**-392.2**	**-1.26**	**-41.86**	**3.84**	**-0.42**	**-0.40**	**-0.03**
Total Worker:	**58,240**	**400**	**10.6**	**-0.01**	**-0.01**	**-0.02**	**0.00**	**0.00**	**0.00**
Total Overall:	**594,183**	**2,896**	**-381.5**	**-1.28**	**-41.87**	**3.82**	**-0.42**	**-0.40**	**-0.03**

GHG Emissions from Diverted Throughput (i.e GHG Emissions that would Occur Without Project)
From CARB "Waste Diversion GHG Emission Reduction Calculator for FY 2015-16 (.xlsx)"

Avoided Emissions from Composting in Windrows, CASP and Anaerobic Digester

Compost Worksheet

Year	Feedstock Diverted for Windrow Composting (Short Tons)	Feedstock Diverted for ASP System Composting (Short Tons)	Composition of Feedstock (% Food Waste)	Composition of Feedstock (% Green Waste)	Residual Material Sent to Landfill (Short Tons)	Net Tons of Material Diverted (Short Tons)	Net GHG Benefit (MTCO2e)
2016	180,000	75,000	22%	78%	0	255,000	48,891

Standalone Anaerobic Digestion (AD) Worksheet

Year	Feedstock Diverted for Anaerobic Digestion Producing Vehicle Fuel & Digestate that is Landfilled (Short Tons)	Feedstock Diverted for Anaerobic Digestion Producing Vehicle Fuel & Digestate that is Composted (Short Tons)	Feedstock Diverted for Anaerobic Digestion Producing Electricity & Digestate is Landfilled (Short Tons)	Feedstock Diverted for Anaerobic Digestion Producing Electricity & Digestate is Composted (Short Tons)	Feedstock Diverted for Anaerobic Digestion to Inject into Pipeline & Digestate is Landfilled (Short Tons)	Feedstock Diverted for Anaerobic Digestion to Inject into Pipeline & Digestate is Composted (Short Tons)	Residual Material Sent to Landfill (Short Tons)	Net Tons of Material Diverted (Short Tons)	Net GHG Benefit (MTCO2e)
2016	0	0	0	40,000	0	0	0	40,000	10,000

295,000	**Total material diverted from landfill (short tons)**
58,891	**Total Estimated GHG Emission Reductions per year ($MTCO_2e$)**

ALTERNATE METHOD

CARB "Method for Estimating Greenhouse Gas Emission Reductions from Diversion of Organic Waste from Landfills to Compost Facilities", March 2016

Final Compost Emission Reduction Factor

The CERF is determined by subtracting the composting emissions from the composting emission reductions for each waste type. The results are included in Table 11.

Table 11. CERF values by waste type.

Waste Type	Composting Benefits (Btotal)	Composting Emissions	Final CERF (MT CO2e/ ton waste input)
Food Waste	0.69	0.07	0.62
Yard Trimmings	0.51	0.07	0.44
Mixed Organics	0.63	0.07	0.56

This leads to a CERF of **0.44 – 0.62 MTCO2E/ton of feedstock.**

49,863	Quantity of food diverted from landfill (tons)
131,275	Quantity of green diverted from landfill (tons)
181,138	Total quantity of compostable diverted (tons)
88,676	Net benefit MTCO2e per year
101,437	Net benefit MTCO2e per year using Mixed Organics CERF

Avoided LF Flare Emissions

Material will be diverted from Toland Landill to the Project. Toland Landfill utilizes a flare to control volatile emissions, so this spreadsheet calculates flaring emissions avoided by the Project. These emissions are then included in the Project Baseline for the significance determination in this AQCCIA.

Quantity of Gas Diverted from Toland Road (based on Landgem model for 2018)

5.15E+07	m3/year total landfill gas
25,760,000	m3/year methane
1,819,411,798	ft3/year total landfill gas
909,705,899	ft3/year methane

Toland Road Flare Emission Factors (VCAPCD Emissions Factors for Toland Road Landfill, 1/24/17)

Units	ROC	NOx	PM	CO
lb/MMBTU	0.010	0.060	0.020	0.200
lb/MMcf landfill gas	5.0	30.0	10.0	100.0
lb/MMcf CH_4	10.5	63	21	210

Emissions

Parameter	ROC	NOx	PM10	PM2.5	CO
EF (lb/10^6 dscf $CH_{4)}$	11	63	21	21	210
Throughput (10^6 dscf CH_4/year)	910	910	910	910	910
Emissions (lb/year)	9,552	57,311	19,104	19,104	191,038
Emissions (ton/year)	4.8	28.7	9.6	9.6	95.5
Emissions (lb/day)	26.2	157.0	52.3	52.3	523.4

Conversions:

50.0%	% methane in landfill gas
500	Btu/scf for landfill gas (VCAPCD assumption)
1050	Btu/scf for CH_4
35.31467	ft3/m3

Peak Year Emissions (lb/yr)

Source	DPM	ETHYL BENZENE	STYRENE	1,3-BUT ADIENE	ACROLEIN	XYLENES	TOLUENE	N-HEXANE	PROPION ALDEHYDE	MTBE	FORM ALDEHYDE	2,2,4-TRIME THYLPENTANE	METHANOL	BENZENE
Offroad Source (Source 1)														
Off Road Diesel	-157													
Fugitive Organics (Source 3)														
Windrow/CASP/AD Organics		3.70E+01	6.82E+01			2.39E+02					1.24E+03		148,097	
AD Source (Source 2)														
AD CHP Engines		2.7E-01				5.4E-01	1.1E+00	5.4E-01			2.2E+01			3.0E+00
AD Flare		6.6E-03				1.3E-02	2.7E-02	1.3E-02			5.4E-01			7.3E-02
Total:		2.8E-01				5.5E-01	1.1E+00	5.5E-01			2.2E+01			3.0E+00
Road Source (Source 4)														
On Road Various	9.66	4.6E-02	5.4E-03	2.3E-02	5.8E-03	3.6E-01	2.5E-01	6.7E-02	1.7E-03	8.2E-02	1.4E-01	7.3E-02	3.4E-02	1.2E-01

Source	ACETALD EHYDE	MEK	NAPHTHA LENE	(1-METHYL ETHYL) BENZENE	propylene	Ammonia	Arsenic	Chlorine	Copper	Mercury	Nickel	Vanadium	Isopropyl alcohol	Dichloro Benzene
Offroad Source (Source 1)														
Off Road Diesel														
Fugitive Organics (Source 3)														
Windrow/CASP/AD Organics	910					93,292							57,607	2.5E+02
AD Source (Source 2)														
AD CHP Engines	8.1E-01				4.6E+01									
AD Flare	2.0E-02				1.1E+00									
Total:	8.3E-01				4.7E+01									
Road Source (Source 4)														
On Road Various	1.3E-02	8.3E-04	2.1E-03	8.3E-04	1.4E-01									

Peak Hour Emissions (lb/h)

Source	DPM	ETHYL BENZENE	STYRENE	1,3-BUT ADIENE	ACROLEIN	XYLENES	TOLUENE	N-HEXANE	PROPION ALDEHYDE	MTBE	FORM ALDEHYDE	2,2,4-TRIME THYLPENTANE	METHANOL	BENZENE
Offroad Source (Source 1)														
Off Road Diesel			4.0E-06		1.8E-06	7.2E-05	1.0E-04				1.0E-03		2.1E-06	1.4E-04
Fugitive Organics (Source 3)														
Windrow/CASP/AD Organics		4.97E-03	9.2E-03			3.2E-02					1.7E-01		2.0E+01	
AD Source (Source 2)														
AD CHP Engines		4.6E-05				9.2E-05	1.8E-04	9.2E-05			3.7E-03			5.1E-04
AD Flare		1.1E-06				2.3E-06	4.5E-06	2.3E-06			9.2E-05			1.2E-05
Total:		4.7E-05				9.5E-05	1.9E-04	9.5E-05			3.8E-03			5.2E-04
Road Source (Source 4)														
On Road Various		1.8E-05	2.1E-05	9.1E-06	1.1E-05	4.8E-04	5.7E-04	2.6E-05	6.5E-07	3.2E-05	4.8E-03	2.9E-05	2.3E-05	6.6E-04

Source	ACETALD EHYDE	MEK	NAPHTHA LENE	(1-METHYL ETHYL) BENZENE	propylene	Ammonia	Arsenic	Chlorine	Copper	Mercury	Nickel	Vanadium	Isopropyl alcohol	Dichloro Benzene
Offroad Source (Source 1)														
Off Road Diesel		1.0E-04				-2.7E-04	-4.0E-07	-2.8E-05	-2.0E-06	-2.4E-06	-1.5E-06	-2.3E-06		
Fugitive Organics (Source 3)														
Windrow/CASP/AD Organics	1.2E-01					1.2E+01							7.7E+00	3.4E-02
AD Source (Source 2)														
AD CHP Engines	1.4E-04				7.8E-03									
AD Flare	3.4E-06				1.9E-04									
Total:	1.4E-04				8.0E-03									
Road Source (Source 4)														
On Road Various	5.1E-06	4.7E-04	8.1E-07	3.3E-07	5.7E-05	1.3E-05	1.9E-08	1.3E-06	9.7E-08	1.2E-07	7.4E-08	1.1E-07		

Biogas TAC Emissions

Emissions Factor

Parameter	propylene	hexane	formaldehyde	acetaldehyde	xylenes (mixed)	benzene	toluene	ethyl benzene
% of ROC	1.69%	0.02%	0.81%	0.03%	0.02%	0.11%	0.04%	0.01%

% of ROC emissions based on CARB's CATEF database for natural gas burned in ICE reciprocating engines (#719).

Baseline Emissions

Source not present in baseline

Post-Project Emissions

Parameter	ROC Emissions (lbs/hr,	Emissions							
		propylene	hexane	formaldehyde	acetaldehyde	xylenes (mixed)	benzene	toluene	ethyl benzene
Hourly (lbs/hr)									
AD CHP Engines	0.461	7.8E-03	9.2E-05	3.7E-03	1.4E-04	9.2E-05	5.1E-04	1.8E-04	4.6E-05
AD Flare	0.011	1.9E-04	2.3E-06	9.2E-05	3.4E-06	2.3E-06	1.2E-05	4.5E-06	1.1E-06
Yearly (lbs/yr)									
AD CHP Engines	2,695	45.54	0.54	21.83	0.81	0.54	2.96	1.08	0.27
AD Flare	66.3	1.12	0.01	0.54	0.02	0.01	0.07	0.03	0.01

Project Increment Emissions

Parameter	ROC Emissions (lbs/hr,	Emissions							
		propylene	hexane	formaldehyde	acetaldehyde	xylenes (mixed)	benzene	toluene	ethyl benzene
Hourly (lbs/hr)									
AD CHP Engines	0.461	7.8E-03	9.2E-05	3.7E-03	1.4E-04	9.2E-05	5.1E-04	1.8E-04	4.6E-05
AD Flare	0.011	1.9E-04	2.3E-06	9.2E-05	3.4E-06	2.3E-06	1.2E-05	4.5E-06	1.1E-06
Yearly (lbs/yr)									
AD CHP Engines	2,695	45.54	0.54	21.83	0.81	0.54	2.96	1.08	0.27
AD Flare	66.3	1.12	0.01	0.54	0.02	0.01	0.07	0.03	0.01

Onsite Equipment TAC Emissions

TAC Emissions Factors

ROC Based Components	Benzene	Toluene	Xylenes	Formaldehyde	Acrolein	Methanol	MEK	Styrene
Fraction of ROC EF:	2.0E-02	1.5E-02	1.0E-02	1.5E-01	2.6E-04	3.0E-04	1.5E-02	5.8E-04

DPM Based Components	Ammonia	Arsenic	Chlorine	Copper	Mercury	Nickel	Vanadium
Fraction of DPM EF:	3.4E-03	5.0E-06	3.4E-04	2.5E-05	3.0E-05	1.9E-05	2.9E-05

Baseline TAC Emissions

Parameter	DPM			ROC	
	lb/day	lb/year	lb/hr	lb/day	lb/hr
Off Road Engine Exhaust	1.81	564	0.15	3.24	0.27

Source	Yearly Emissions	Hourly Emissions (lbs/hr)																
	DPM (lbs/year)	DPM (lb/hr)	ROC (lbs/hr)	Benzene	Toluene	Xylenes	Formaldehyde	Acrolein	Methanol	MEK	Styrene	Ammonia	Arsenic	Chlorine	Copper	Mercury	Nickel	Vanadium
Off Road Engine Exhaust	564.4	1.5E-01	2.7E-01	5.4E-03	4.0E-03	2.8E-03	4.0E-02	7.1E-05	8.1E-05	4.0E-03	1.6E-04	5.1E-04	7.5E-07	5.2E-05	3.8E-06	4.5E-06	2.9E-06	4.4E-06

Post-Project Emissions

Source	Yearly Emissions	Hourly Emissions (lbs/hr)																
	DPM (lbs/year)	DPM (lb/hr)	ROC (lbs/hr)	Benzene	Toluene	Xylenes	Formaldehyde	Acrolein	Methanol	MEK	Styrene	Ammonia	Arsenic	Chlorine	Copper	Mercury	Nickel	Vanadium
Off Road Engine Exhaust	407.9	7.0E-02	2.8E-01	5.5E-03	4.1E-03	2.9E-03	4.1E-02	7.3E-05	8.3E-05	4.1E-03	1.6E-04	2.4E-04	3.5E-07	2.4E-05	1.7E-06	2.1E-06	1.3E-06	2.0E-06

Project Increment Emissions

Source	Yearly Emissions	Hourly Emissions (lbs/hr)																
	DPM (lbs/year)	DPM (lb/hr)	ROC (lbs/hr)	Benzene	Toluene	Xylenes	Formaldehyde	Acrolein	Methanol	MEK	Styrene	Ammonia	Arsenic	Chlorine	Copper	Mercury	Nickel	Vanadium
Off Road Engine Exhaust	-156.5	-8.1E-02	6.9E-03	1.4E-04	1.0E-04	7.2E-05	1.0E-03	1.8E-06	2.1E-06	1.0E-04	4.0E-06	-2.7E-04	-4.0E-07	-2.8E-05	-2.0E-06	-2.4E-06	-1.5E-06	-2.3E-06

Hours/day = 12
Days/Year (Baseline) = 312

Modeled Road Length (Onsite) = 0.24 miles/round trip Hours/Day = 10
Modeled Road Length (Offsite) = 6.2 miles/round trip
Modeled Road Length (Total) = 6.44 miles/round trip

TAC Emissions Factors

Diesel Speciation (Acute Risk Assessment Only)

ROC Based Components	Benzene	Toluene	Xylenes	Formaldehyde	Acrolein	Methanol	MEK	Styrene
% of ROC EF:	2.00%	1.47%	1.04%	14.71%	0.03%	0.03%	1.48%	0.06%

DPM Based Components	Ammonia	Arsenic	Chlorine	Copper	Mercury	Nickel	Vanadium
% of DPM EF:	0.337%	0.001%	0.034%	0.003%	0.003%	0.002%	0.003%

Note: ROC fractions calculated from emission factors from CARB diesel speciation for diesel fueled farm equipment except acrolein, which is from AP42 Section 3-3. DPM speciation also from CARB for diesel fueled automobiles.

CNG ROC Speciation

ROC Based Components	propylene	hexane	formaldehyde	acetaldehyde	xylenes (mixed)	benzene	toluene	ethyl benzene
% of ROC EF:	1.69%	0.02%	0.81%	0.03%	0.02%	0.11%	0.04%	0.01%

CARB Speciation organics profile 719 - ICE-reciprocating-natural gas

Gasoline ROC Speciation

ROC Based Components	ETHYLBENZENE	STYRENE	1,3-BUTADIENE	ACROLEIN	XYLENES	TOLUENE	N-HEXANE	PROPIONALDEHYDE	MTBE	FORMALDEHYDE	2,2,4-TRIMETHYLPENTANE	METHANOL	BENZENE	ACETALDEHYDE	MEK	NAPHTHALENE	(1-METHYLETHYL) BENZENE
% of ROC EF:	1.09%	0.13%	0.56%	0.14%	8.70%	5.99%	1.61%	0.04%	1.97%	1.73%	1.75%	0.83%	2.68%	0.25%	0.02%	0.05%	0.02%

CARB Speciation organics profile 438 - Gasoline - catalyst - stabilized exhaust - ARB IUS summer 1999 as referenced by "PREPARATION OF EMISSIONINVENTORIES OF TOXIC AIRCONTAMINANTS FOR THE BAY AREA"

Baseline TAC Emissions

		VMT Calculation					DPM Emissions			ROC Emissions		
Vehicle	**Fuel Type**	**Vehicles per year**	**VMT/year**	**Days / Year**	**VMT / Day**	**VMT / hr**	**EF (g/VMT)**	**(lb/yr)**	**(lb/hr)**	**EF (g/VMT)**	**(lb/yr)**	**(lb/hr)**
HHD Solid Waste Collection Truck	Diesel	2,098	13,509	312	43	4.3	0.017	0.50	1.6E-04	0.394	---	3.8E-03
HHD Solid Waste Collection Truck	CNG	1,398	9,006	312	29	2.9	---	---	---	0.125	2.48	7.9E-04
HHD Fleet Truck from MRFs	Diesel	1,547	9,963	312	32	3.2	0.090	1.98	6.3E-04	0.232	---	1.6E-03
Light Duty Truck - Business/Self Haul (Diesel Half)	Diesel	1,246	8,021	312	26	2.6	0.007	0.12	3.7E-05	0.019	---	1.1E-04
Light Duty Truck - Business/Self Haul (Gas Half)	Gasoline	1,246	8,021	312	26	2.6	---	---	---	0.030	0.53	1.7E-04
HHD Fleet - Roll off	Diesel	772	4,972	260	19	1.9	0.090	0.99	3.8E-04	0.232	---	9.8E-04
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	Diesel	0	0	260	0	0.0	0.090	0.00	0.0E+00	0.232	---	0
HHD Fleet Truck - Finished Compost, Mulch, etc.	Diesel	1,580	10,176	260	39	3.9	0.090	2.02	7.8E-04	0.232	---	2.0E-03
Light Duty Truck (Diesel Half)	Diesel	786	5,063	260	19	1.9	0.007	0.07	2.8E-05	0.019	---	8.0E-05
Light Duty Truck (Gas Half)	Gasoline	786	5,063	260	19	1.9	---	---	---	0.030	0.33	1.3E-04

Pounds per Year

Vehicle	Fuel Type	DPM (lb/yr)	ETHYLBENZENE	STYRENE	1,3-BUTADIENE	ACROLEIN	XYLENES	TOLUENE	N-HEXANE	PROPIONALDEHYDE	MTBE	FORMALDEHYDE	2,2,4-TRIMETHYLPENTANE	METHANOL	BENZENE	ACETALDEHYDE	MEK	NAPHTHALENE	(1-METHYLETHYL) BENZENE	propylene
HHD Solid Waste Collection Truck	Diesel	0.50																		
HHD Solid Waste Collection Truck	CNG		2.5E-04				5.0E-04	9.9E-04	5.0E-04			2.0E-02			2.7E-03	7.4E-04				4.2E-02
HHD Fleet Truck from MRFs	Diesel	1.98																		
Light Duty Truck - Business/Self Haul (Diesel Half)	Diesel	0.12																		
Light Duty Truck - Business/Self Haul (Gas Half)	Gasoline		5.7E-03	6.8E-04	2.9E-03	7.4E-04	4.6E-02	3.1E-02	8.5E-03	2.1E-04	1.0E-02	9.1E-03	9.2E-03	4.4E-03	1.4E-02	1.3E-03	1.1E-04	2.6E-04	1.1E-04	
HHD Fleet - Roll off	Diesel	0.99																		
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	Diesel	0.00																		
HHD Fleet Truck - Finished Compost, Mulch, etc.	Diesel	2.02																		
Light Duty Truck (Diesel Half)	Diesel	0.07																		
Light Duty Truck (Gas Half)	Gasoline		3.6E-03	4.3E-04	1.9E-03	4.6E-04	2.9E-02	2.0E-02	5.3E-03	1.3E-04	6.5E-03	5.7E-03	5.8E-03	2.8E-03	8.9E-03	8.3E-04	6.6E-05	1.7E-04	6.6E-05	
	Total:	**5.68**	**9.6E-03**	**1.1E-03**	**4.8E-03**	**1.2E-03**	**7.5E-02**	**5.2E-02**	**1.4E-02**	**3.4E-04**	**1.7E-02**	**3.5E-02**	**1.5E-02**	**7.1E-03**	**2.6E-02**	**2.9E-03**	**1.7E-04**	**4.3E-04**	**1.7E-04**	**4.2E-02**

Pounds per Hour

Vehicle	Fuel Type	ETHYLBENZENE	STYRENE	1,3-BUTADIENE	ACROLEIN	XYLENES	TOLUENE	N-HEXANE	PROPIONALDEHYDE	MTBE	FORMALDEHYDE	2,2,4-TRIMETHYLPENTANE	METHANOL	BENZENE	ACETALDEHYDE	MEK	NAPHTHALENE	(1-METHYLETHYL) BENZENE	propylene	Ammonia	Arsenic	Chlorine	Copper	Mercury	Nickel	Vanadium
HHD Solid Waste Collection Truck	Diesel		2.2E-06		9.9E-07	3.9E-05	5.5E-05				5.5E-04		1.1E-06	7.5E-05		5.5E-05				5.4E-07	8.0E-10	5.5E-08	4.0E-09	4.8E-09	3.0E-09	4.6E-09
HHD Solid Waste Collection Truck	CNG	7.9E-08				1.6E-07	3.2E-07	1.6E-07			6.4E-06			8.7E-07	2.4E-07				1.3E-05							
HHD Fleet Truck from MRFs	Diesel		9.5E-07		4.3E-07	1.7E-05	2.4E-05				2.4E-04		4.9E-07	3.3E-05		2.4E-05				2.1E-06	3.2E-09	2.2E-07	1.6E-08	1.9E-08	1.2E-08	1.8E-08
Light Duty Truck - Business/Self Haul (Diesel Half)	Diesel		6.1E-08		2.8E-08	1.1E-06	1.5E-06				1.5E-05		3.2E-08	2.1E-06		1.6E-06				1.3E-07	1.9E-10	1.3E-08	9.4E-10	1.1E-09	7.1E-10	1.1E-09
Light Duty Truck - Business/Self Haul (Gas Half)	Gasoline	1.8E-06	2.2E-07	9.4E-07	2.4E-07	1.5E-05	1.0E-05	2.7E-06	6.7E-08	3.3E-06	2.9E-06	2.9E-06	1.4E-06	4.5E-06	4.2E-07	3.4E-08	8.4E-08	3.4E-08								
HHD Fleet - Roll off	Diesel		5.7E-07		2.6E-07	1.0E-05	1.4E-05				1.4E-04		2.9E-07	2.0E-05		1.4E-05				1.3E-06	1.9E-09	1.3E-07	9.5E-09	1.1E-08	7.2E-09	1.1E-08
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	Diesel		0		0	0	0				0		0	0		0				0	0	0	0	0	0	0
HHD Fleet Truck - Finished Compost, Mulch, etc.	Diesel		1.2E-06		5.3E-07	2.1E-05	2.9E-05				2.9E-04		6.0E-07	4.0E-05		3.0E-05				2.6E-06	3.9E-09	2.7E-07	1.9E-08	2.3E-08	1.5E-08	2.3E-08
Light Duty Truck (Diesel Half)	Diesel		4.6E-08		2.1E-08	8.3E-07	1.2E-06				1.2E-05		2.4E-08	1.6E-06		1.2E-06				9.6E-08	1.4E-10	9.8E-09	7.1E-10	8.5E-10	5.4E-10	8.2E-10
Light Duty Truck (Gas Half)	Gasoline	1.4E-06	1.7E-07	7.1E-07	1.8E-07	1.1E-05	7.6E-06	2.1E-06	5.1E-08	2.5E-06	2.2E-06	2.2E-06	1.1E-06	3.4E-06	3.2E-07	2.5E-08	6.4E-08	2.5E-08								
	Total:	**3.3E-06**	**5.3E-06**	**1.7E-06**	**2.7E-06**	**1.1E-04**	**1.4E-04**	**4.9E-06**	**1.2E-07**	**5.8E-06**	**1.3E-03**	**5.2E-06**	**5.0E-06**	**1.8E-04**	**9.8E-07**	**1.3E-04**	**1.5E-07**	**5.9E-08**	**1.3E-05**	**6.8E-06**	**1.0E-08**	**6.9E-07**	**5.0E-08**	**6.1E-08**	**3.8E-08**	**5.9E-08**

Project TAC Emissions

		VMT Calculation					DPM Emissions			ROC Emissions		
Vehicle	**Fuel Type**	**Vehicles per year**	**VMT/year**	**Days / Year**	**VMT / Day**	**VMT / hr**	**EF (g/VMT)**	**(lb/yr)**	**(lb/hr)**	**EF (g/VMT)**	**(lb/yr)**	**(lb/hr)**
HHD Solid Waste Collection Truck	Diesel	11,400	73,416	260	282	28.2	0.013	2.15	8.3E-04	0.316	---	2.0E-02
HHD Solid Waste Collection Truck	CNG	7,600	48,944	260	188	18.8	---	---	---	0.100	10.82	4.2E-03
HHD Fleet Truck from MRFs	Diesel	6,225	40,091	260	154	15.4	0.032	2.86	1.1E-03	0.137	---	4.7E-03
Light Duty Truck - Business/Self Haul (Diesel Half)	Diesel	16,079	103,551	260	398	39.8	0.006	1.26	4.9E-04	0.018	---	1.5E-03
Light Duty Truck - Business/Self Haul (Gas Half)	Gasoline	16,079	103,551	260	398	39.8	---	---	---	0.018	4.18	1.6E-03
HHD Fleet - Roll off	Diesel	1,439	9,270	260	36	3.6	0.032	0.66	2.5E-04	0.137	---	1.1E-03
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	Diesel	1,788	11,513	260	44	4.4	0.032	0.82	3.2E-04	0.137	---	0.00134
HHD Fleet Truck - Finished Compost, Mulch, etc.	Diesel	15,960	102,784	260	395	39.5	0.032	7.33	2.8E-03	0.137	---	1.2E-02
Light Duty Truck (Diesel Half)	Diesel	3,183	20,496	260	79	7.9	0.006	0.25	9.6E-05	0.018	---	3.0E-04
Light Duty Truck (Gas Half)	Gasoline	3,183	20,496	260	79	7.9	---	---	---	0.018	0.83	3.2E-04

Pounds per Year

Vehicle	**Fuel Type**	**DPM (lb/yr)**	**ETHYLBENZENE**	**STYRENE**	**1,3-BUTADIENE**	**ACROLEIN**	**XYLENES**	**TOLUENE**	**N-HEXANE**	**PROPIONALDEHYDE**	**MTBE**	**FORMALDEHYDE**	**2,2,4-TRIMETHYLPENTANE**	**METHANOL**	**BENZENE**	**ACETALDEHYDE**	**MEK**	**NAPHTHALENE**	**(1-METHYLETHYL) BENZENE**	**propylene**
HHD Solid Waste Collection Truck	Diesel	2.15																		
HHD Solid Waste Collection Truck	CNG		1.1E-03				2.2E-03	4.3E-03	2.2E-03			8.8E-02			1.2E-02	3.2E-03				1.8E-01
HHD Fleet Truck from MRFs	Diesel	2.86																		
Light Duty Truck - Business/Self Haul (Diesel Half)	Diesel	1.26																		
Light Duty Truck - Business/Self Haul (Gas Half)	Gasoline		4.6E-02	5.4E-03	2.3E-02	5.8E-03	3.6E-01	2.5E-01	6.7E-02	1.7E-03	8.2E-02	7.2E-02	7.3E-02	3.5E-02	1.1E-01	1.0E-02	8.4E-04	2.1E-03	8.4E-04	
HHD Fleet - Roll off	Diesel	0.66																		
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	Diesel	0.82																		
HHD Fleet Truck - Finished Compost, Mulch, etc.	Diesel	7.33																		
Light Duty Truck (Diesel Half)	Diesel	0.25																		
Light Duty Truck (Gas Half)	Gasoline		9.0E-03	1.1E-03	4.6E-03	1.2E-03	7.2E-02	5.0E-02	1.3E-02	3.3E-04	1.6E-02	1.4E-02	1.4E-02	6.9E-03	2.2E-02	2.1E-03	1.7E-04	4.1E-04	1.7E-04	
	Total:	**15.34**	**5.6E-02**	**6.5E-03**	**2.8E-02**	**7.0E-03**	**4.4E-01**	**3.0E-01**	**8.3E-02**	**2.0E-03**	**9.9E-02**	**1.7E-01**	**8.8E-02**	**4.2E-02**	**1.5E-01**	**1.6E-02**	**1.0E-03**	**2.5E-03**	**1.0E-03**	**1.8E-01**

Pounds per Hour

Vehicle	**Fuel Type**	**ETHYLBENZENE**	**STYRENE**	**1,3-BUTADIENE**	**ACROLEIN**	**XYLENES**	**TOLUENE**	**N-HEXANE**	**PROPIONALDEHYDE**	**MTBE**	**FORMALDEHYDE**	**2,2,4-TRIMETHYLPENTANE**	**METHANOL**	**BENZENE**	**ACETALDEHYDE**	**MEK**	**NAPHTHALENE**	**(1-METHYLETHYL) BENZENE**	**propylene**	**Ammonia**	**Arsenic**	**Chlorine**	**Copper**	**Mercury**	**Nickel**	**Vanadium**
HHD Solid Waste Collection Truck	Diesel		1.1E-05		5.2E-06	2.0E-04	2.9E-04				2.9E-03		5.9E-06	3.9E-04		2.9E-04				2.8E-06	4.1E-09	2.8E-07	2.1E-08	2.5E-08	1.6E-08	2.4E-08
HHD Solid Waste Collection Truck	CNG	4.2E-07				8.3E-07	1.7E-06	8.3E-07			3.4E-05			4.6E-06	1.2E-06				7.0E-05							
HHD Fleet Truck from MRFs	Diesel		2.7E-06		1.2E-06	4.9E-05	6.9E-05				6.9E-04		1.4E-06	9.3E-05		6.9E-05				3.7E-06	5.5E-09	3.8E-07	2.8E-08	3.3E-08	2.1E-08	3.2E-08
Light Duty Truck - Business/Self Haul (Diesel Half)	Diesel		8.9E-07		4.1E-07	1.6E-05	2.3E-05				2.3E-04		4.6E-07	3.1E-05		2.3E-05				1.6E-06	2.4E-09	1.7E-07	1.2E-08	1.5E-08	9.2E-09	1.4E-08
Light Duty Truck - Business/Self Haul (Gas Half)	Gasoline	1.8E-05	2.1E-06	9.0E-06	2.2E-06	1.4E-04	9.6E-05	2.6E-05	6.4E-07	3.2E-05	2.8E-05	2.8E-05	1.3E-05	4.3E-05	4.0E-06	3.2E-07	8.0E-07	3.2E-07								
HHD Fleet - Roll off	Diesel		6.3E-07		2.9E-07	1.1E-05	1.6E-05				1.6E-04		3.2E-07	2.2E-05		1.6E-05				8.6E-07	1.3E-09	8.8E-08	6.4E-09	7.6E-09	4.8E-09	7.4E-09
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	Diesel		7.8E-07		3.5E-07	1.4E-05	2.0E-05				2.0E-04		4.0E-07	0.0E+00		2.0E-05				1.1E-06	1.6E-09	1.1E-07	7.9E-09	9.5E-09	6.0E-09	9.2E-09
HHD Fleet Truck - Finished Compost, Mulch, etc.	Diesel		6.9E-06		3.2E-06	1.2E-04	1.8E-04				1.8E-03		3.6E-06	2.4E-04		1.8E-04				9.5E-06	1.4E-08	9.7E-07	7.1E-08	8.5E-08	5.4E-08	8.2E-08
Light Duty Truck (Diesel Half)	Diesel		1.8E-07		8.0E-08	3.2E-06	4.5E-06				4.5E-05		9.1E-08	6.1E-06		4.5E-06				3.2E-07	4.8E-10	3.3E-08	2.4E-09	2.9E-09	1.8E-09	2.8E-09
Light Duty Truck (Gas Half)	Gasoline	3.5E-06	4.1E-07	1.8E-06	4.5E-07	2.8E-05	1.9E-05	5.1E-06	1.3E-07	6.3E-06	5.5E-06	5.6E-06	2.6E-06	8.5E-06	8.0E-07	6.4E-08	1.6E-07	6.4E-08								
	Total:	**2.1E-05**	**2.6E-05**	**1.1E-05**	**1.3E-05**	**5.9E-04**	**7.1E-04**	**3.2E-05**	**7.7E-07**	**3.8E-05**	**6.0E-03**	**3.4E-05**	**2.8E-05**	**8.4E-04**	**6.1E-06**	**6.0E-04**	**9.6E-07**	**3.9E-07**	**7.0E-05**	**2.0E-05**	**2.9E-08**	**2.0E-06**	**1.5E-07**	**1.8E-07**	**1.1E-07**	**1.7E-07**

Project Increment TAC Emissions

Pounds per Year

Vehicle	**Fuel Type**	**DPM (lb/yr)**	**ETHYLBENZENE**	**STYRENE**	**1,3-BUTADIENE**	**ACROLEIN**	**XYLENES**	**TOLUENE**	**N-HEXANE**	**PROPIONALDEHYDE**	**MTBE**	**FORMALDEHYDE**	**2,2,4-TRIMETHYLPENTANE**	**METHANOL**	**BENZENE**	**ACETALDEHYDE**	**MEK**	**NAPHTHALENE**	**(1-METHYLETHYL) BENZENE**	**propylene**
HHD Solid Waste Collection Truck	Diesel	1.65																		
HHD Solid Waste Collection Truck	CNG		8.3E-04				1.7E-03	3.3E-03				6.8E-02			9.2E-03	2.5E-03				1.4E-01
HHD Fleet Truck from MRFs	Diesel	0.88																		
Light Duty Truck - Business/Self Haul (Diesel Half)	Diesel	1.15																		
Light Duty Truck - Business/Self Haul (Gas Half)	Gasoline		4.0E-02	4.7E-03	2.0E-02	5.1E-03	3.2E-01	2.2E-01	5.9E-02	1.5E-03	7.2E-02	6.3E-02	6.4E-02	3.0E-02	9.8E-02	9.1E-03	7.3E-04	1.8E-03	7.3E-04	
HHD Fleet - Roll off	Diesel	-0.33																		
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	Diesel	0.82																		
HHD Fleet Truck - Finished Compost, Mulch, etc.	Diesel	5.31																		
Light Duty Truck (Diesel Half)	Diesel	0.18																		
Light Duty Truck (Gas Half)	Gasoline		5.4E-03	6.4E-04	2.8E-03	6.9E-04	4.3E-02	3.0E-02	8.0E-03	2.0E-04	9.8E-03	8.6E-03	8.7E-03	4.1E-03	1.3E-02	1.2E-03	9.9E-05	2.5E-04	9.9E-05	
	Total:	**9.66**	**4.6E-02**	**5.4E-03**	**2.3E-02**	**5.8E-03**	**3.6E-01**	**2.5E-01**	**6.7E-02**	**1.7E-03**	**8.2E-02**	**1.4E-01**	**7.3E-02**	**3.4E-02**	**1.2E-01**	**1.3E-02**	**8.3E-04**	**2.1E-03**	**8.3E-04**	**1.4E-01**

Pounds per Hour

Vehicle	**Fuel Type**	**ETHYLBENZENE**	**STYRENE**	**1,3-BUTADIENE**	**ACROLEIN**	**XYLENES**	**TOLUENE**	**N-HEXANE**	**PROPIONALDEHYDE**	**MTBE**	**FORMALDEHYDE**	**2,2,4-TRIMETHYLPENTANE**	**METHANOL**	**BENZENE**	**ACETALDEHYDE**	**MEK**	**NAPHTHALENE**	**(1-METHYLETHYL) BENZENE**	**propylene**	**Ammonia**	**Arsenic**	**Chlorine**	**Copper**	**Mercury**	**Nickel**	**Vanadium**
HHD Solid Waste Collection Truck	Diesel		9.2E-06		4.2E-06	1.7E-04	2.3E-04				2.3E-03		4.8E-06	3.2E-04		2.4E-04				2.2E-06	3.3E-09	2.3E-07	1.7E-08	2.0E-08	1.3E-08	1.9E-08
HHD Solid Waste Collection Truck	CNG	3.4E-07				6.7E-07	1.3E-06				2.7E-05			3.7E-06	1.0E-06				5.7E-05							
HHD Fleet Truck from MRFs	Diesel		1.8E-06		8.0E-07	3.2E-05	4.5E-05				4.5E-04		9.1E-07	6.1E-05		4.5E-05				1.6E-06	2.3E-09	1.6E-07	1.2E-08	1.4E-08	8.9E-09	1.4E-08
Light Duty Truck - Business/Self Haul (Diesel Half)	Diesel		8.3E-07		3.8E-07	1.5E-05	2.1E-05				2.1E-04		4.3E-07	2.9E-05		2.1E-05				1.5E-06	2.2E-09	1.5E-07	1.1E-08	1.3E-08	8.5E-09	1.3E-08
Light Duty Truck - Business/Self Haul (Gas Half)	Gasoline	1.6E-05	1.9E-06	8.1E-06	2.0E-06	1.3E-04	8.6E-05	2.3E-05	5.8E-07	2.8E-05	2.5E-05	2.5E-05	1.2E-05	3.9E-05	3.6E-06	2.9E-07	7.2E-07	2.9E-07								
HHD Fleet - Roll off	Diesel		5.9E-08		2.7E-08	1.1E-06	1.5E-06				1.5E-05		3.0E-08	2.0E-06		1.5E-06				-4.2E-07	-6.3E-10	-4.3E-08	-3.1E-09	-3.8E-09	-2.4E-09	-3.6E-09
HHD Fleet Truck - Fertillizers, Sand, Gravel, etc.	Diesel		0		0	0	0				0		0	0		0				0	0	0	0	0	0	0
HHD Fleet Truck - Finished Compost, Mulch, etc.	Diesel		5.8E-06		2.6E-06	1.0E-04	1.5E-04				1.5E-03		3.0E-06	2.0E-04		1.5E-04				6.9E-06	1.0E-08	7.0E-07	5.1E-08	6.1E-08	3.9E-08	5.9E-08
Light Duty Truck (Diesel Half)	Diesel		1.3E-07		5.9E-08	2.3E-06	3.3E-06				3.3E-05		6.7E-08	4.5E-06		3.3E-06				2.3E-07	3.4E-10	2.3E-08	1.7E-09	2.0E-09	1.3E-09	2.0E-09
Light Duty Truck (Gas Half)	Gasoline	2.1E-06	2.5E-07	1.1E-06	2.7E-07	1.7E-05	1.1E-05	3.1E-06	7.6E-08	3.8E-06	3.3E-06	3.3E-06	1.6E-06	5.1E-06	4.8E-07	3.8E-08	9.5E-08	3.8E-08								
	Total:	**1.8E-05**	**2.1E-05**	**9.1E-06**	**1.1E-05**	**4.8E-04**	**5.7E-04**	**2.6E-05**	**6.5E-07**	**3.2E-05**	**4.8E-03**	**2.9E-05**	**2.3E-05**	**6.6E-04**	**5.1E-06**	**4.7E-04**	**8.1E-07**	**3.3E-07**	**5.7E-05**	**1.3E-05**	**1.9E-08**	**1.3E-06**	**9.7E-08**	**1.2E-07**	**7.4E-08**	**1.1E-07**

Organic TAC Emissions

Emissions Factors

Parameter	Acetaldehyde	Isopropyl Alcohol	Methanol	Formaldehyde	Xylene	Ethyl Benzene	Styrene	Dichlorobenzene Isomers	Ammonia
Fraction of VOC Ef (lb/lb)	3.20E-03	2.03E-01	5.21E-01	4.35E-03	8.40E-04	1.30E-04	2.40E-04	8.80E-04	---

*Emission factors are derived from the VOC profile 1616, "Green Waste Composting" from *EPA Speciate 4.4* , test data from the 2011 article *Volatile organic compound emissions from green waste composting: Characterization and ozone formation* in the journal, *Atmospheric Environment* ,(45, 2011, 1841-1848).

Ammonia emissions calculated directly as part of criteria pollutant calculations and assume 20% control

Baseline Emissions

Parameter	Throughput (wet ton/yr)	VOC (lbs/ton)	VOC (lbs/year)	VOC (lbs/hr)	NH3 (lbs/ton)	NH3 (lbs/year)	NH3 (lbs/hr)
Stockpiling	58,619	0.2	11,724	1.3	0	0	0.0
Windrow Composting & Cure	58,619	3.58	209,856	24.0	0.624	36,578	4.2
		Total:	**221,580**	**25.3**	**Total:**	**36,578**	**4.2**

Parameter	VOC Emissions	Acetaldehyde	Isopropyl Alcohol	Methanol	Formaldehyde	Xylene	Ethyl Benzene	Styrene	Dichlorobenzene Isomers	NH3
Hourly Emissions (lbs/hr)	25.3	0.08	5.12	13.17	0.11	0.02	0.00	0.01	0.02	4.18
Yearly Emissions (lbs/year)	221,580	709	44,888	115,399	964	186	29	53	195	36,578

Post-Project Total Emissions

Parameter	VOC Emissions	Acetaldehyde	Isopropyl Alcohol	Methanol	Formaldehyde	Xylene	Ethyl Benzene	Styrene	Dichlorobenzene Isomers	NH3
Hourly Emissions (lbs/hr)	63.5	0.20	12.87	33.09	0.28	0.05	0.01	0.02	0.06	16.31
Yearly Emissions (lbs/year)	505,945	1,619	102,494	263,496	2,201	425	66	121	445	129,870

Project Increment Emissions

Parameter	VOC Emissions	Acetaldehyde	Isopropyl Alcohol	Methanol	Formaldehyde	Xylene	Ethyl Benzene	Styrene	Dichlorobenzene Isomers	NH3
Hourly Emissions (lbs/hr)	38.2	0.12	7.75	19.91	0.17	0.03	0.00	0.01	0.03	12.13
Yearly Emissions (lbs/year)	284,365	910	57,607	148,097	1,237	239	37	68	250	93,292

Hours/day = 24
Days/year = 365

AERMOD Input Parameters

Source			Source Parameters	
Name	**ID**	**Source Type**	**Release/Stack Height (m)**	**Initial Vertical Dim. (m)**
Off Road Equipment	PAREA1	Area	5	2.3
Fugitive VOCs	PAREA3	Area	3.05	0.0
Anaerobic Digester	PAREA2	Area	5	2.3
Haul Road	SLINE1	Line (Adj. Vol.)	2.55	2.37

Lakes Version: 9.3.0

Met Data:

File Name:	723927.sfc & 723927.pfl
Date Range:	1/1/2009 to 1/2/2014
Location:	Oxnard Airport

Elevation Data:

Source:	WebGIS
Location:	Saticoy and Santa Paula

Grid Receptors:

Grid Points	x = 130	y = 80
Grid Spacing (m)	50	
Flagpole Ht (m)	1.5	
Onsite Receptors	Disabled	

Boundary Receptors:

Receptor Spacing (m)	25
Flagpole ht (m)	1.5

AERMOD Dispersion Options

Regulatory Default Options	**Yes**	Were regulatory defaults options utilized?	
If no, which non-default options were utilized:		**---**	N/A
		---	N/A
		---	N/A
Averaging Times Utilized	**1-hr**	Acute risk averaging time	
	Period	Chronic/cancer risk averaging time ("period" = met data duration)	
Dispersion Coefficient	**Rural**	Rural or Urban	
Terrain Height Options	**Elevated**	Elevated (default), flat, or flat & elevated	