SECTION 2.0

PROJECT DESCRIPTION

2.1 PROJECT DESCRIPTION

Details regarding the proposed project included in this section are based on technical studies, mapping, figures, and the project description provided by the Applicant, California Ethanol and Power Imperial Valley 1, LLC (CE&P IV 1). Information referring to project design, process, construction, schedule, and workforce is based on the most up-to-date engineering available from the Applicant and generally represent conservative estimates. It should be noted that minor changes to the project configuration may occur based on final engineering and permit requirements for the project components.

2.1.1 INTRODUCTION

This section of the Environmental Impact Report (EIR) describes the Sugarcane and Sweet Sorghum-to-Ethanol, Electricity and Bio-Methane Facility (or "proposed project") proposed by CE&P IV 1, a wholly owned subsidiary of California Ethanol and Power, LLC (CE&P).

The proposed project consists of two primary components: 1) a sugarcane and sweet sorghum-to-ethanol, electricity and bio-methane facility; and, 2) 41,000 acres of sugarcane supplemented by 33,000 acres of sweet sorghum. Both crops will be grown in the Imperial Valley.

The ethanol, electricity and bio-methane facility involves a Conditional Use Permit (CUP) that will allow for the construction and operation of a 66 million gallon per year fuel-grade ethanol facility. The operation will generate 49.9 megawatts (MW) of renewable electricity, 33.6 MW of which will be available for sale into the electrical grid on an annual basis. The facility will also produce 930 million cubic feet of bio-methane and 28,000 tons of inorganic fertilizer annually.

2.1.2 PROJECT BACKGROUND

CE&P, LLC (the Holding Company) was formed in June 2007, whereas CE&P IV 1, LLC (the Operating Company) was formed in November 2011. Phase I engineering for the proposed project began in January 2009 and was completed in April of the same year. Phase II engineering occurred over a three month period from June to August 2011. Phase III Final Engineering will begin in May or June 2013 and is expected to be completed around September 2013. On June 7, 2012, the Applicant submitted an application for a CUP to the Imperial County Department of Planning and Development Services (ICPDS) to allow construction and operation of an ethanol facility. As part of the CUP application, the Applicant is proposing to build, operate, and maintain an ethanol, electricity and bio-methane facility on a 158.2 acre site in Imperial County. The proposed project includes the cultivation of sugarcane and sweet sorghum (the feedstock) in the Imperial Valley for conversion into low-carbon fuel-grade ethanol, renewable electricity, bio-methane and other co-products.

CE&P has selected Uni-Systems do Brasil, LTDA (Uni-Systems) to be the lead engineer/constructor for the project. Uni-Systems is a recognized global supplier of advanced technologies, integrated process solutions, engineering design, and state-of-the-art hardware for sugarcane and sweet sorghum-to-ethanol, electricity and bio-methane plants.

In the last few years, Uni-Systems has completed several new projects in Brazil and abroad, including a 35 million gallon per year fuel-grade ethanol plant for the Romero Group in Peru built on a "turn-key" basis (i.e. Uni-Systems was solely responsible to its client for turning over a professionally designed, procured and constructed ready-to-operate facility). Uni-Systems also recently completed the engineering and construction of several plant sections of a 40 million gallon per year fuel-grade ethanol plant for Maple Energy in Peru; constructed a 20 million gallon per year fuel-grade ethanol plant for

Aroeira Bioenergia in Brazil on a turn-key basis; and is currently constructing three other ethanol facilities in Brazil and abroad, all on a turn-key basis.

This EIR is being prepared to analyze the potential environmental impacts of the proposed Sugarcane and Sweet Sorghum-to-Ethanol, Electricity and Bio-Methane Facility and fulfill the requirements of the California Environmental Quality Act (CEQA).

2.1.3 PURPOSE AND NEED FOR THE PROPOSED PROJECT

A. TWO-FOLD NEED FOR LOW CARBON ETHANOL

As recognized by Federal and State agencies, the need for domestically-produced low-carbon ethanol is two-fold:

Reduce U.S. Reliance on Foreign Oil

In 2011, the United States (U.S.) imported approximately 45 percent of the crude oil that it consumes, two-thirds of which was refined into automotive fuels. It is clear that attendant adverse economic, political, environmental and security-related consequences for the U.S. could potentially be very severe. That risk will continue unless and until the U.S. becomes a net exporter of crude oil. Currently, the International Energy Agency projects that the U.S. will not be a net exporter prior to 2030. One recognized means to ameliorate that risk is to replace as much crude oil-derived transportation fuel as possible with biofuels such as sugarcane ethanol that is economically derived from domestic renewable resources.

Supply Global Need For Low-Carbon Fuels

Led by the United Nations' Intergovernmental Panel on Climate Change, the worldwide consensus is that global warming is unequivocal, will have cataclysmic consequences if not checked, and is caused in large part by human activity. With the combustion of transportation fuels accounting for a substantial portion of the greenhouse gas emissions that are the major contributor to global warming, one obvious solution is to produce substantially greater volumes of low-carbon versions of such fuels.

B. FEDERAL INITIATIVES

To address both of the above concerns, the Federal Energy Independence and Security Act of 2007 amended the Renewable Fuel Standard that was part of the Energy Act of 2005, creating Renewable Fuel Standard 2 (RFS2). RFS2 mandates the minimum yearly usage of renewable fuels by the companies that sell and/or distribute transportation fuels in the U.S., starting with 13.95 billion gallons in 2011 and increasing incrementally each year thereafter to 36 billion gallons in 2022. Specifically, no more than 15 billion gallons per year of corn-derived ethanol can be used to satisfy the RFS2 requirements. To make up the balance, RFS2 mandates the use of Advanced Biofuels, defined as renewable fuel, other than ethanol derived from corn starch, derived from renewable feedstock and resulting in greenhouse gas emissions that are at least 50 percent less than gasoline's. Advanced Biofuels in turn are allocated among cellulosic ethanol, biodiesel, and unspecified renewable fuels, with sugarcane-derived ethanol falling into the latter category. The mandated yearly usage of such unspecified Advanced Biofuels increases from 500 million gallons in 2012 to 1 billion gallons in 2014, 2 billion gallons in 2016, up to 3 billion gallons in 2018, and up to 3.5 billion gallons in 2019 and beyond.

The U.S. Environment Protection Agency (USEPA) is tasked with implementing RFS2. The USEPA RFS2 implementation rule establishing new specific annual volume standards for cellulosic biofuel, biomass-based diesel, Advanced Biofuels, and total renewable fuel that must be used in transportation fuel became effective on July 1, 2010. The implementation rule includes new definitions and criteria for both

renewable fuels and the feedstock used to produce them, including greenhouse gas emission thresholds as determined by lifecycle analysis. In order to qualify, fuels must meet certain minimum greenhouse gas emissions reduction standards, based on a lifecycle assessment, in comparison to the petroleum fuels they displace. For example, the USEPA requires a 20 percent reduction in lifecycle greenhouse gas emissions for any renewable fuel produced at facilities constructed after enactment), a 50 percent reduction to be classified as biomass-based diesel or Advanced Biofuel, and a 60 percent reduction in order to be classified as cellulosic biofuel. The USEPA is making threshold determinations based on a methodology that includes an analysis of the full lifecycle of various fuels, including emissions from international land-use changes resulting from increased biofuel demand. Based on this analysis, the USEPA has determined that CE&P's sugarcane derived ethanol complies with the applicable 50 percent greenhouse gas reduction threshold for Advanced Biofuels.

C. STATE INITIATIVES

California has been more aggressive than the Federal government in addressing both reducing reliance on foreign oil and supplying low-carbon fuels by mandating sustainable energy production and use through several major initiatives.

In 2002, under Senate Bill (SB) 1078 California established its Renewable Portfolio Standard (RPS) Program, with the goal of increasing the percentage of renewable energy in the state's electricity mix to 20 percent of retail sales by 2017. The 2003 Integrated Energy Policy Report recommended accelerating that goal to 20 percent by 2010. The 2004 Energy Report Update further recommended increasing the target to 33 percent by 2020. California's Energy Action Plan supported this goal.

In 2006 under SB 107, California's 20 percent by 2012 RPS goal was codified. The legislation required retail sellers of electricity to increase renewable energy purchases by at least 1 percent per year with a target of 20 percent by 2010. Subsequent recommendations in California energy policy reports advocated a goal of 33 percent by 2020.

On November 17, 2008, then Governor Arnold Schwarzenegger signed Executive Order S-14-08 requiring that "...[a]ll retail sellers of electricity shall serve 33 percent of their load with renewable energy by 2020." The following year, Executive Order S-21-09 directed the California Air Resources Board (CARB), under its Assembly Bill (AB) 32 authority, to enact regulations to achieve the goal of 33 percent renewables by 2020.

In the ongoing effort to codify the ambitious 33 percent renewable goal by 2020, SBX1-2 was signed by Governor Edmund G. Brown Jr., in April 2011. In his signing comments, Governor Brown noted that "This bill will bring many important benefits to California, including stimulating investment in green technologies in the state, creating tens of thousands of new jobs, improving local air quality, promoting energy independence, and reducing greenhouse gas emissions."

The new RPS preempts the CARB's 33 percent Renewable Electricity Standard and applies to all electricity retailers in the state including publicly owned utilities, investor-owned utilities, electricity service providers, and community choice aggregators. All of these entities must adopt the new RPS goals of 20 percent of retail sales from renewable by the end of 2013, 25 percent by the end of 2016, and 33 percent being met by the end of 2020.

The demand for CE&P's electricity and bio-methane is enhanced by California's requirement that each investor-owned utility purchase or generate 33 percent of its electricity from renewable resources by 2020. Public utilities have adopted equally stringent guidelines, but are having difficulty meeting the mandate. CE&P represents one of the most likely sources of baseload green power that will be available in the relatively short term.

Finally, in the January 2007 State of the State, Governor Schwarzenegger asserted California's leadership in clean energy and environmental policy by establishing a Low-Carbon Fuel Standard (LCFS) by Executive Order S-01-07. The LCFS requires oil refineries and distributors to ensure that the mix of fuel they sell in the Californian market meets the established declining targets for greenhouse gas (GHG) emissions measured in CO2-equivalent grams per unit of fuel energy sold for transport purposes. The LCFS directive calls for a reduction of at least 10 percent in the carbon intensity of California's transportation fuels by 2020. These reductions include not only tailpipe emissions but also all other associated emissions from production, distribution and use of transport fuels within the state. Therefore, California LCFS considers the fuel's full life cycle, also known as the "well to wheels" or "seed to wheels" efficiency of transport fuels. The standard is also aimed to reduce the State's dependence on petroleum, create a market for clean transportation technology, and stimulate the production and use of alternative, low carbon fuels in California.

To measure the carbon intensity of transportation fuels consumed in California, the CARB uses a CA-GREET version 1.8b model customized by Life Cycle Associates, LLC (LCA), to take California factors into account. , LCA is recognized worldwide as a leader in its field. Therefore CE&P commissioned LCA to perform a carbon intensity analysis of CE&P's proposed sugarcane-derived ethanol. LCA's Technical Briefing in that regard, projects that the lifecycle carbon intensity of CE&P's ethanol will be in the range of 9.2 grams per megajoule (g/MJ). That is 90 percent lower than the 96 g/MJ carbon intensity of the current California transportation fuel blend of 90 percent California Reformulated Gasoline Blendstock for Oxygenate Blending (CARBOB) and 10 percent Midwest corn ethanol with an average carbon intensity of 98 g/MJ. In comparison, the next best option, Brazilian sugarcane-derived ethanol, has 23 to 39 percent lower carbon intensity, while California corn ethanol is 17 percent lower, and Midwest corn ethanol from 6.25 percent lower to 25 percent higher.

Unfortunately, California transportation fuel blender/retailers will simply not be able to meet the LCFS by continuing to blend Midwest corn-based ethanol into CARBOB. That in turn will put a premium on Brazilian sugarcane ethanol, currently the only other alternative fuel with sufficient production to have a material impact on the LCFS. CE&P's ethanol will be an even more powerful means for California fuel blender/retailers to meet their LCFS obligations.

2.1.4 PROJECT OBJECTIVES

The following objectives have been identified for the proposed project:

- To create a facility that produces low-carbon fuel-grade ethanol, renewable electricity, and bio-methane that will meet California's aggressive standards for renewable energy.
- To use the Imperial Valley's ideal growing conditions for sugarcane and sweet sorghum and to work with local farmers in the growing of these crops as feedstock.
- To contribute to the Imperial County economy by adding approximately $1 billion of Gross Economic Output and generating approximately 10,100 direct and indirect jobs.

2.1.5 SITE LOCATION

The proposed project site is approximately 4.5 miles south-southeast of the City of Brawley and approximately 5 miles north-northeast of the City of Imperial. The project site occupies a single parcel (APN 040-240-07) on the north side of Keystone Road approximately one-half mile west of State Route (SR) 111 and 2.5 miles east of SR 86. **Figure 2.0-1** depicts the regional location of the site and the local vicinity surrounding the property.

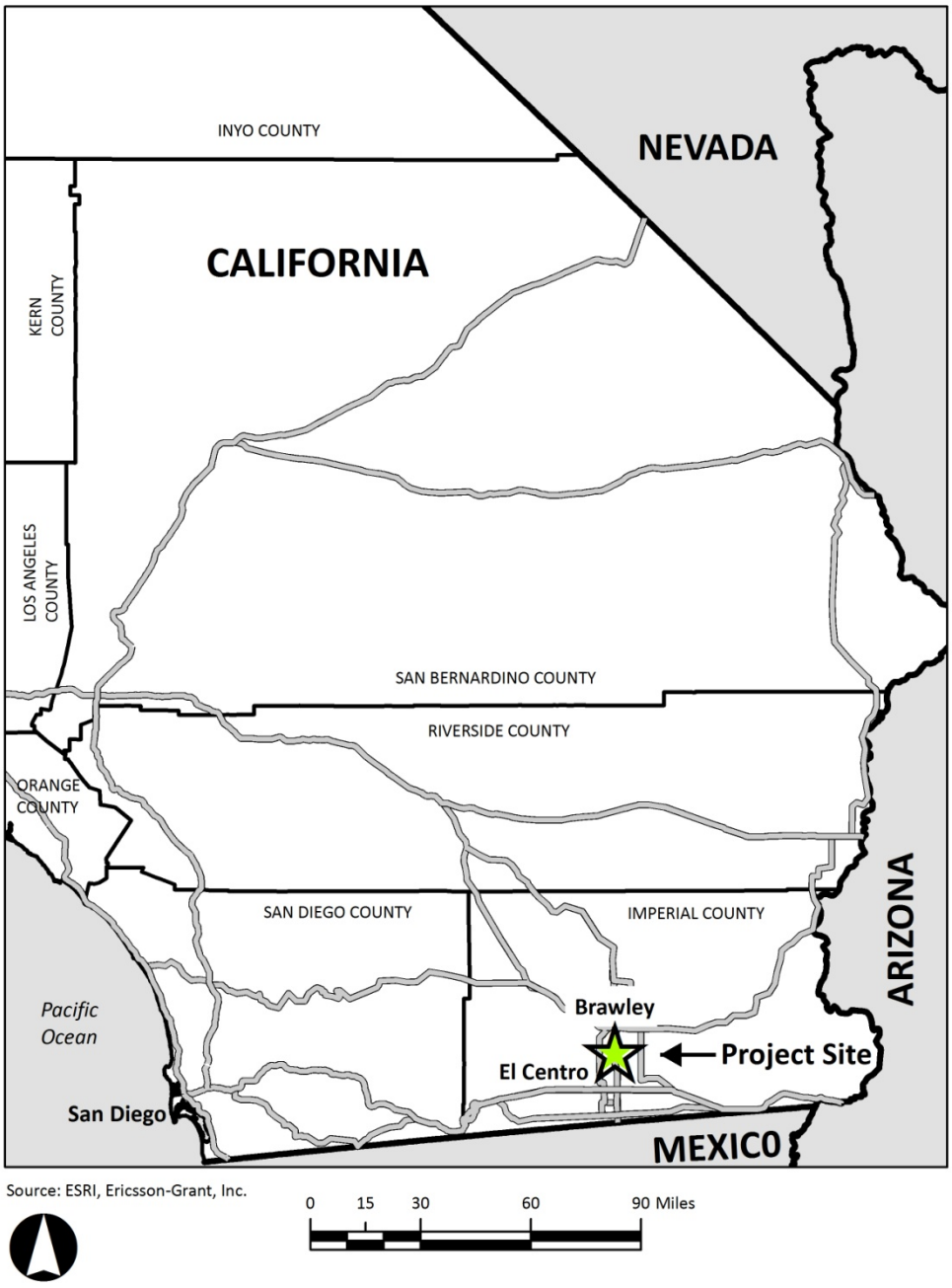

FIGURE 2.0-1
REGIONAL LOCATION MAP

2.1.6 ETHANOL, ELECTRICITY AND BIO-METHANE FACILITY

A. EXISTING SITE USES AND FEATURES

Onsite

The proposed project site is bordered by Keystone Road on the south. The northern boundary is approximately one-half mile south of Carey Road; the western boundary is approximately one-half mile east of Dogwood Road; and the eastern boundary is approximately one-half mile west of SR 111. The site boundaries on the north, east and west follow parcel lines rather than roads or other physical features. The project site lies at an elevation of approximately 135 feet below mean sea level (MSL) (Elevation 865 local datum) in the Imperial Valley region of the California low desert (LandMark 2012, p. 7). **Figure 2.0-2** shows the project site, major roads and highways in the vicinity. **Figure 2.0-3** provides an aerial view of the project site and adjacent parcels.

The single parcel that comprises the project site is vacant, flat-lying abandoned agricultural land. The site has been vacant land since circa 1996 (SCS 2012, p. 3). The Imperial Irrigation District (IID) Rose 7 Drain (an earthen drainage ditch for irrigation water runoff) and Keystone Road (a paved two lane road) form the southern boundary of the site. The Rose Drain extends north along the east side of the site for about 400 feet then diverges northeasterly from the site. The Rose Drain is approximately 10 to 15 feet deep. Intermittent sections of concrete ditch lining (trapezoidal shape) extend north-south near the center of the site (LandMark 2012, p. 7).

Surrounding Areas

As shown in **Figure 2.0-3**, the project site is surrounded by a combination of abandoned and cultivated agricultural lands. Areas to the north include a farm equipment lot, wheat and alfalfa fields. The area to the northeast is planted with Bermuda. The eastern border of the site is adjacent to an abandoned agricultural area and a vacant lot. The area immediately to the south of Keystone Road across from the project site is developed with a commercial catfish farm consisting of multiple ponds. Vacant lots are to the southwest and southeast across Keystone Road from the project site. To the west, the project site is bordered by vacant land and a duck club.

B. GENERAL PLAN AND ZONING DESIGNATIONS

The Imperial County Land Use Plan designates the entire project site Specific Plan Area (SPA). As previously stated, the project parcel has been abandoned since around 1996. As a result, no active agricultural production would be removed to accommodate the project.

The parcel on which the ethanol, electricity and bio-methane facility is proposed is zoned A-2-G – (General Agriculture, Geothermal Overlay Zone) (refer to Figure 4.2-1 in Section 4.2, Land Use) and is part of the amended Mesquite Lake Specific Plan (MLSP). In keeping with being included in the Specific Plan, the Applicant is requesting a zone change to MLI-3 (Mesquite Lake Heavy Industrial). A heavy industrial use with a Conditional Use Permit (CUP) will allow for the construction and operation of an alternative fuel power generation facility. In keeping with the provisions of the zoning designation, the Applicant is seeking a CUP from the ICPDS.

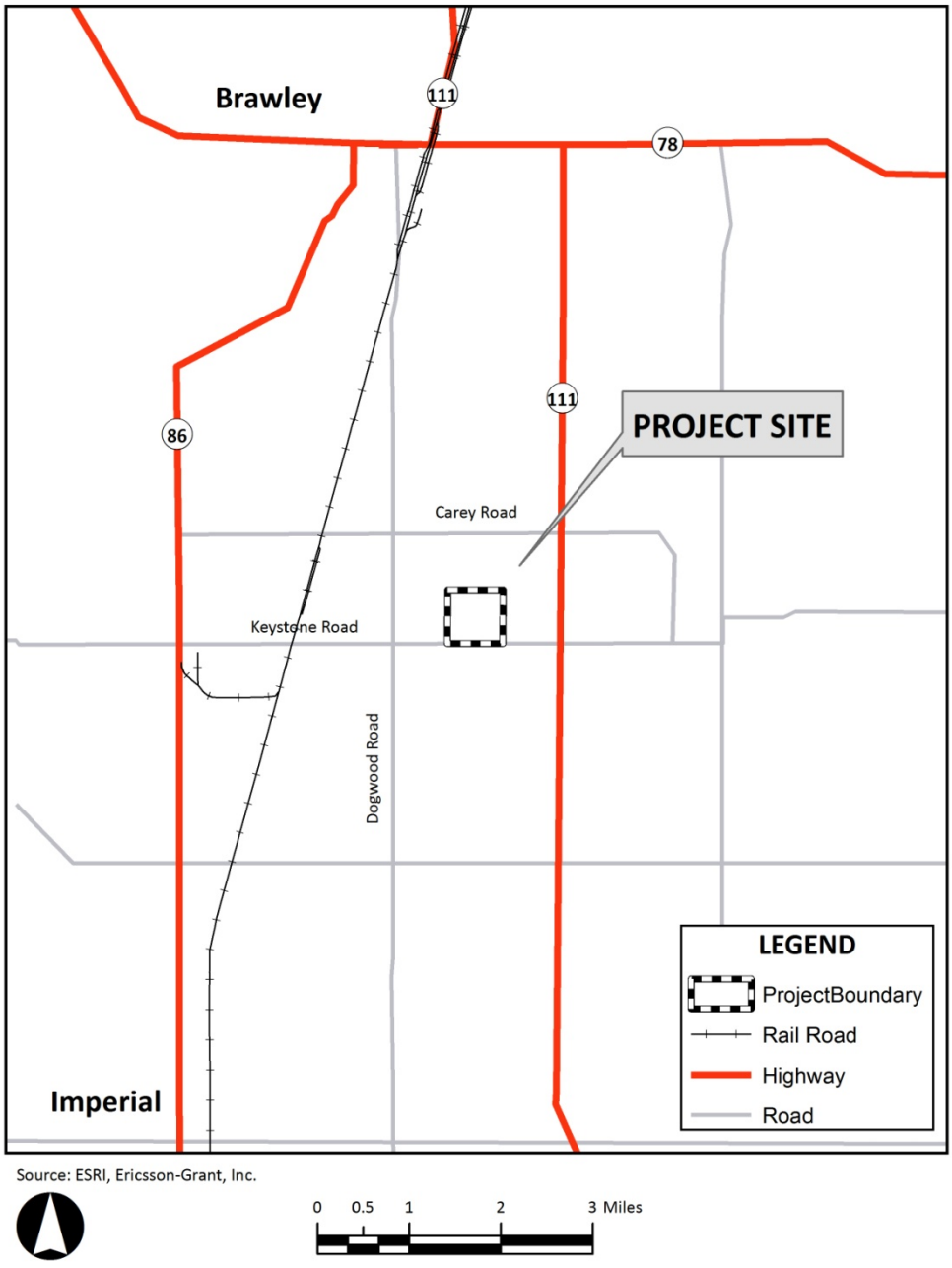

FIGURE 2.0-2
PROJECT VICINITY MAP

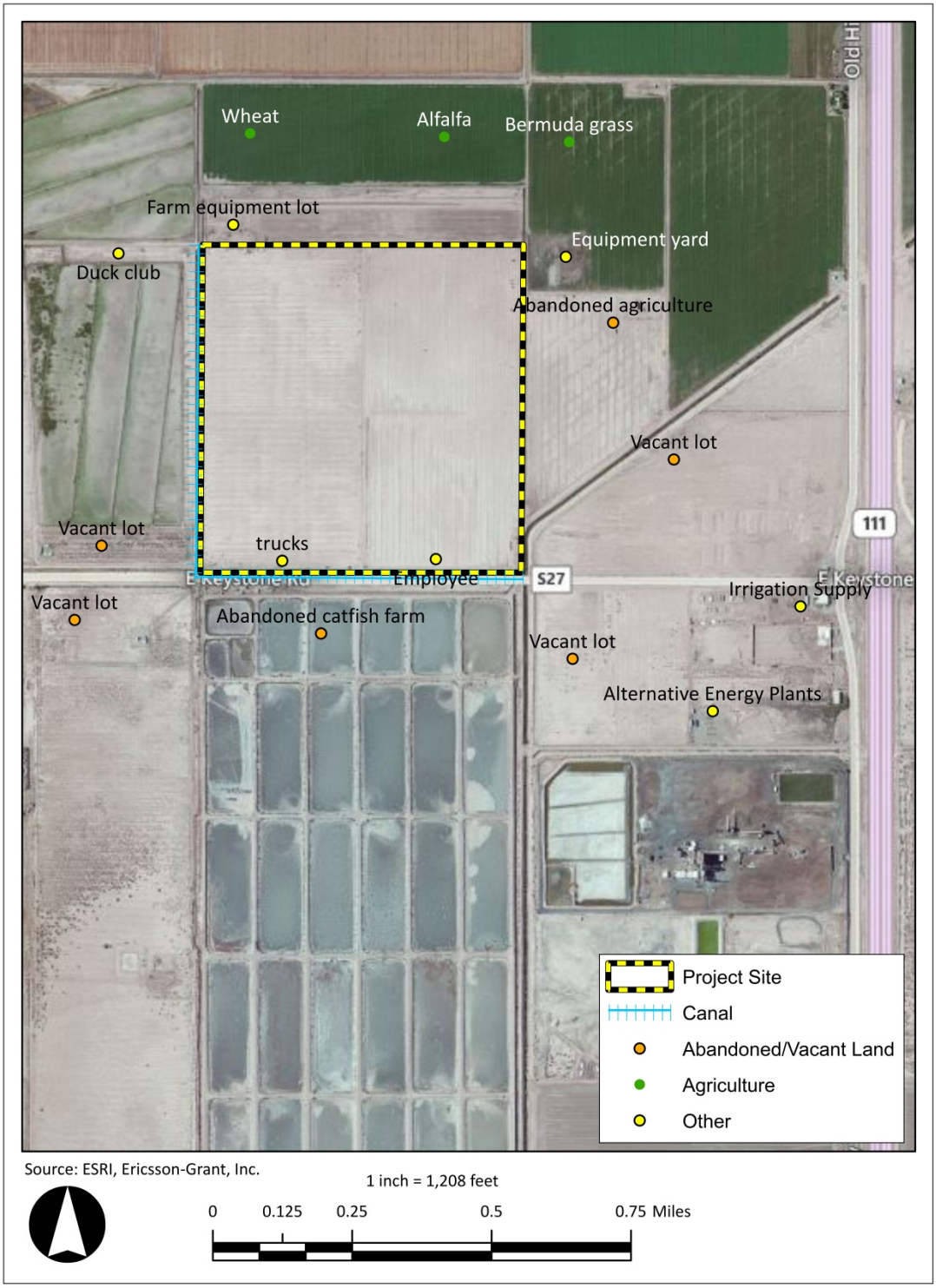

FIGURE 2.0-3
AERIAL PHOTO OF PROJECT SITE AND SURROUNDING AREA

C. FACILITY DESCRIPTION

Site Layout

Figure 2.0-4 shows the current layout of the proposed project [Note: An electronic version of the site plan is provided on the CD attached to this document to facilitate viewing the layout at a larger scale]. A description of each process component of the facility is provided below. **Table 2.0-1** provides a summary of the square footage of the various structures and equipment proposed as part of the ethanol, electricity and bio-methane facility. Approximately 108.4 acres of the site would be covered with asphalt, concrete, gravel, etc., including an internal road network of driveways, roads, parking and truck queuing areas. The 108.4 acres also includes approximately 749,531.8 square feet (or approximately 17.2 acres) of equipment and structures. The remaining 49.8 acres would remain unpaved or be covered with landscape material (turf, trees).

Process Elements for Ethanol Plant

Cane Reception, Handling and Preparation

Sugarcane will be delivered by semi-trailer trucks to the project site immediately after harvesting. Trucks will enter the site from the western entrance off of Keystone Road and proceed to scales to be weighed. The trucks are weighed upon arrival and departure to determine the weight of the sugarcane in each load. The sugarcane is then sampled for sugar content at a station located north of the scales. The weighed and sampled cane is unloaded on to two conveyers. The conveyers are proposed to be drag chain and slat type, fitted with sand removal equipment at the discharge ends. The cane will be discharged from each conveyer on to the main cane conveyer. From this point, the cane will be delivered to the shredder which will open the juice-containing cells prior to passing the shredded stalks to a mechanical diffuser which will hydraulically extract 97.5 percent of the juice.

Juice Treatment/Clarification/Evaporation

Following extraction, the juice will be treated with conventional lime and a flocculent. Mixed juice heaters will heat the juice to above flash point in order to release any entrained air and other gasses. The juice will then be clarified in a conventional short retention clarifier, with the heavy "mud" being taken off the bottom and the lighted clear juice being taken off the top of the clarifier and transferred to a clear juice tank. The mud will then be returned to the appropriate stage of the diffuser. The juice from the clear juice tank will be heated before being passed into the evaporators, where the Brix level (a measure of sugar content, with one degree Brix representing one gram of sucrose in 100 grams of solution) will be raised from approximately 13°to 23°.

Fermentation

Juice fermentation will be accelerated by a strain of yeast cultivated for its sugarcane-to-ethanol yield. Juice would be fermented in a batch rather than a continuous process. The resulting mash slurry is called "beer" and contains approximately 10 percent ethanol by weight and carbon dioxide (CO_2). Manifolds collect the CO_2 and send it to a gas scrubber before releasing it into the atmosphere.

The fermentation process will include yeast recovery and recirculation. The recovered yeast will be treated in pre-fermenters equipped with mechanical stirrers where the cream of yeast will be diluted and treated with sulphuric acid, nutrients, compressed air, and antibiotics. The yeast treatment system will include provisions for storing, feeding, and dosing all required chemicals.

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TABLE 2.0-1
SUMMARY OF PRELIMINARY EQUIPMENT/STRUCTURES FOR THE PROPOSED ETHANOL, ELECTRICITY AND BIO-METHANE FACILITY

Equipment/Structure	Square Feet
Bagasse Deposit	1,737.1
Bagasse Deposit 24-Hours	1,600.0
Boiler / Ash Treatment	6,000.0
Power House	3163.8
Cooling Tower	609.1
Substation	768.0
Guard House	84.0
Scale (office)	48.8
Scale (sensor)	315.0
Hilo Unloader	60.0
Discharge Area Hilo Unloader	134.4
Control Tower	30.0
Reception Cane Conveyer	2,377.6
Diffuser	1463.7
Heaters	338.2
Exit Conveyer Diffuser	113.2
Drying (Roller Dewatered)	63.0
Drying (Milling Drying)	63.0
Drying (Conveyer)	186.2
Water Tank	900.0
Biodigester	14,310.4
Juice Treatment	1,488.0
Evaporation	908.3
Cooling Towers	1,218.2
Fermentation	2,002.6
Distillery	2,622.0
Chemical Storage	264.5
Ethanol Tank	14,283.0
Fusel Oil Storage Tank	529.0
Second Grade Ethanol Storage Tank	759.0
Water Supply Dam	10,404.0
Stores	1,448.0
Boilermakers	1,448.0
Warehouse	354.8
Industrial Workshops	354.8
Laboratory	296.0
Administrative Office	818.7
Dressing Loans	177.5
Restaurant and Recreation Area	359.6
Baths/Dressing Rooms /Infirmary	439.2
Stormwater Pond	8,373.8
Total	749,531.8

Source: Uni-Systems 2012.

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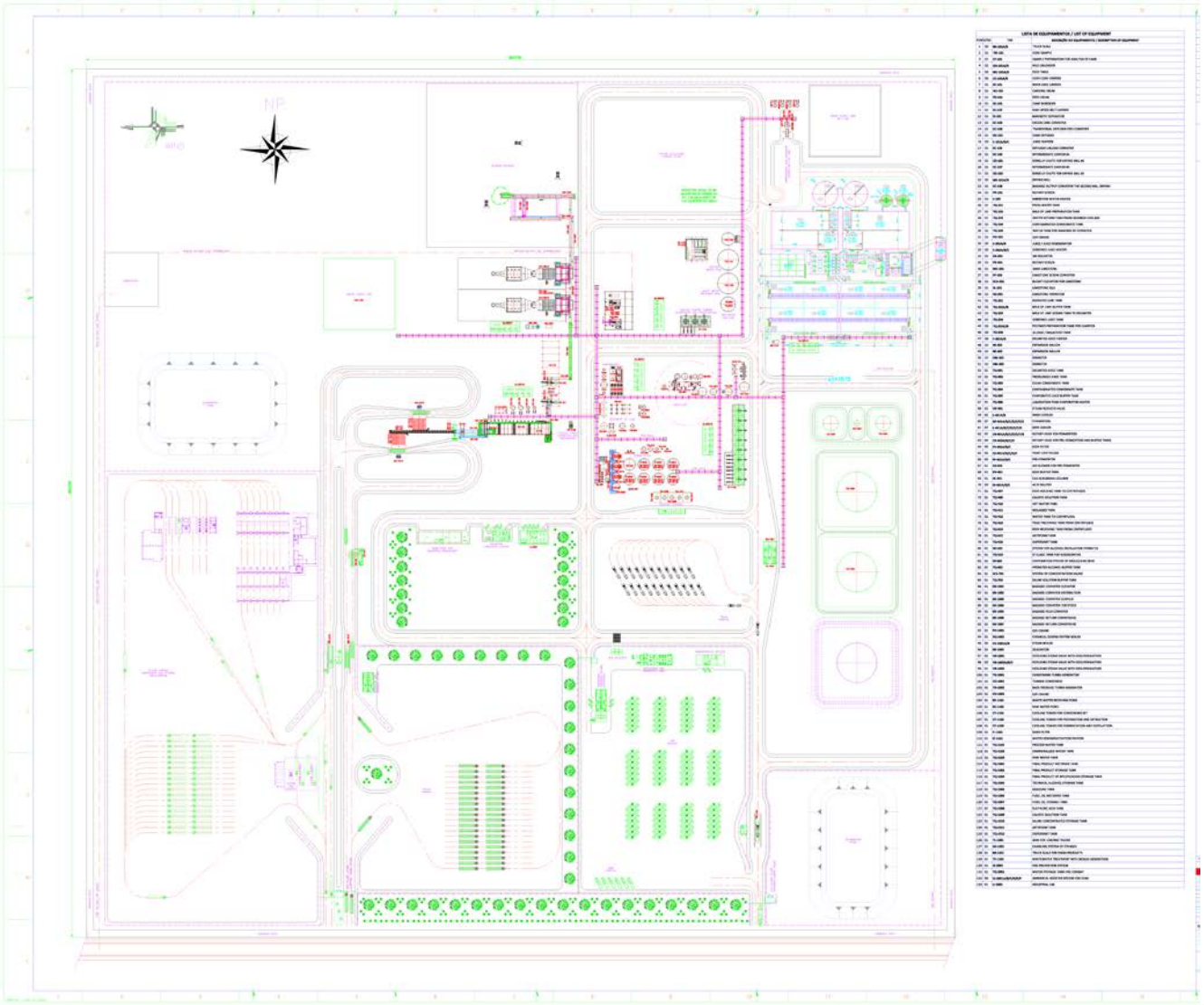

An electronic version of this plan is included on the CD attached to this EIR to allow viewing at a larger scale with higher resolution.

Source: Uni-Systems 2013.

FIGURE 2.0-4
SITE PLAN (GENERAL LAYOUT)

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Distillation and De-Hydration

The beer with the carbon dioxide (CO_2) removed will be sent to the distillation tanks where the ethanol, having a lower boiling point than the rest of the beer is removed as an ethanol-rich (50 percent ethanol) vapor. The remainder of the beer (called "vinasse") is significantly dilute, and is sent to the vinasse processing system. The ethanol is then sent to a rectifier that produces ethanol with only four percent water content.

To further reduce the water content of the ethanol, it will be processed through a "molecular sieve". As the ethanol/water vapor combination passes through the sieve, the smaller water molecules diffuse into, and are captured by, ceramic beads. The larger ethanol molecules, now stripped of most of the water molecules, emerge as dehydrated ethanol with at least 99.85 percent ethanol content.

Ethanol and By-Products Storage and Handling

The ethanol and by-products storage and handling element of the project consists of measurement tanks, transfer pumps, storage tanks, and discharge and truck loading station. Truck loading would be designed for loading up to 30 trucks per day. **Table 2.0-2** provides a summary of the size of major tanks. The tanks will be constructed of carbon steel with internal floating roofs and external conical roofs, vent valves and flame arrestors. The tank farm will be designed according to state and federal laws.

TABLE 2.0-2
SUMMARY OF MAJOR TANK STORAGE CAPACITY

Tank Description	Storage Capacity in Days
Dehydrated ethanol	28 days storage
Hydrated ethanol	7 days storage
Technical alcohol	28 days storage
Diesel oil	28 days storage
Out of spec alcohol	7 days storage
Concentrated Vinasse	28 days storage

Source: CE&P 2011.

The proposed project will require storage tanks to hold various liquids associated with the ethanol production process. **Table 2.0-3** summarizes the approximately eight tanks that will be constructed as part of the project.

TABLE 2.0-3
SUMMARY OF STORAGE TANK DIMENSIONS

Tank Description	Height in feet	Diameter in feet	Capacity in gallons
Hydrated Alcohol Buffer Tank	26	25	96,930
Final Product Storage Tank	39	119	3,280,482
Final Product Storage Tank (B)	39	119	3,280,482
Technical Alcohol Storage Tank	32	49	448,686
Denaturant/Gasoline Tank	32	44	361,554
Fusel Oil Tank	20	17	32,301
Final Product Metering Tank	15	19	30,650
Fusel Oil Metering Tanks	13	8	5,400

Source: CE&P 2012a.

Electrical Generation

Bagasse Handling & Storage

The shredded biomass left over after the juice has been extracted is called "bagasse." Because the electricity generation element of the project will operate 330 days per year, it is not necessary to stockpile large quantities of bagasse. A bagasse shed will house 8 hours of generation capacity with an additional 24 hour generation capacity stockpiled on a concrete slab depending on the time of year as the percentage of fiber in feedstock varies seasonally. This stockpiled supply would be used when the ethanol production element of the project is down for maintenance and therefore no bagasse is being produced.

Steam Generation

The bagasse will be fed by conveyor for combustions to two identical boilers to provide redundancy in operations. Each of the two boilers will operate at facility design conditions (80 percent Maximum Continuous Rating [MCR] capacity, nominally at 150 tons per hour of steam) as per the Energy and Mass Balance (EMB) requirements.

Gas scrubbing and selective catalytic reduction (SCR) technology will be applied to reduce flue gas emissions to be within Imperial County, state and federal requirements.

Electricity Generation

The electricity generation aspect of the project will include two turbine-generators: a back-pressure set of approximately 15 MW capacity and a pass-out/condensing set of approximately 35 MW capacity. A 1 MW diesel driven generator set sized to raise steam on the boilers and a single turbine generator will be coupled to an emergency motor control center. The electricity would be generated at 13.8kV, 60Hz.

Substation

An onsite substation with medium and high voltage step-up transformer(s) with mineral, oil, breakers, buswork, protective relaying, supervisory control and a data acquisition (SCADA), and associated equipment is proposed in the northwest portion of the site. The substation will be fenced for safety per codes and IID requirements. One or more structures may be outside the fence for meters and control equipment. The communications systems may include above or below ground fiber optic cable or microwave tower. The project will be interconnected to the existing 92 kV line which will allow transmission to the regional transmission system.

Bio Methane Production

Biogas Handling

Biogas produced by vinasse digestion will be scrubbed, purified to pipeline quality bio-methane, and piped to the nearby Sempra/Southern California Gas Company (SoCalGC) natural gas pipeline using all necessary safety devices and equipment. A flare designed to handle the total production of biogas will be installed to burn the bio-methane when it cannot be accepted by the main pipeline.

Solid Fertilizer Plant

The only feedstock suitable as a solid fertilizer (or rather soil amendment) would be in the form of any spent lees, boiler ash, or any solids removed during the wastewater treatment process. These by-products will be sold as a fertilizer soil amendment product. Approximately 28,000 tons of fertilizer per year is anticipated to be generated as a by-product of project operation.

Industrial Wastewater Treatment

Anaerobic digestion has been selected as best available technology for the treatment of the distillery wastewater. A description of the process is as follows:

Pre-Treatment

The stillage from the ethanol facility will be collected and pumped to a pretreatment consisting of a cooling system for the stillage, an equalization/acidification tank, and pH correction facilities. Because the temperature of the stillage is too high for an optimal performance of the anaerobic digestion, the stillage will first be cooled down and the excess heat will be reused in other processes. A partial pre-acidification of the stillage will occur in the equalization/acidification tank enhancing the biological degradation in the next digestion step. This pH correction is important primarily in the start-up phase of the digestion.

Anaerobic Digestion

Anaerobic digestion is a complex biochemical reaction carried out in a number of steps by several types of micro-organisms that require no oxygen to live. During the process, a gas principally composed of methane (CH_4) and carbon dioxide (CO_2), otherwise known as biogas, is produced through the bacterial activity.

The biogas produced will be used as a clean renewable fuel by upgrading its quality to natural gas standards used to power motor vehicles.

The drawback of the anaerobic digestion is that the organic loading is not completely removed and that nutrients like nitrogen and phosphorus are only removed in a very limited amount. The minerals contained in the stillage are also not removed by the anaerobic digestion.

Secondary Treatment

The proposed secondary treatment is an activated sludge system. This system is a biochemical process for treating sewage and industrial wastewater that uses air (or oxygen) and microorganisms to biologically oxidize the remaining organic pollutants. The activated sludge process includes an aeration tank where air is injected and thoroughly mixed into the wastewater and a settling tank (usually referred to as a "clarifier" or "settler") to allow the biomass to settle.

As the stillage contains a significant amount of nitrogen, a biological nitrogen removal process will be incorporated in order to protect the receiving waters from eutrophication.

The biological removal of nitrogen is a three-step process. In a first step, ammonia is oxidized to nitrite by a first group of bacteria. In the second step the nitrite is further oxidized to nitrates by another group of bacteria. These two groups of bacteria, known as “nitrifiers,” are strict “aerobes;” meaning, they must have free dissolved oxygen to perform their work. This dissolved oxygen is supplied by the aeration.

In a third step, the nitrates are reduced and converted into nitrogen gas by a third group of bacteria, known as “denitrifiers”. This process is performed under anoxic conditions; that is, when the dissolved oxygen concentration is very low. The bacteria use the nitrates as an oxygen source and they need a carbon source which is supplied by the incoming wastewater.

After the secondary treatment, an effluent is obtained that is almost suitable for discharge. Because minerals in the stillage are not removed in either the anaerobic digestion or in the activated sludge system, part of the clarified effluent is further received in a tertiary treatment. The other part will be bypassed and mixed again with tertiary treated water.

Tertiary Treatment

The first step of the tertiary treatment is a filtration step with sand filters for the removal of suspended solids. In the sand filtration, the remaining suspended solids in the effluent of the secondary clarifier are further removed in order to obtain effluent values low enough to go to the ultrafiltration. The retained suspended solids are continuously washed out of the filter bed and recycled back to the activated sludge system.

After sand filtration, the water is further treated by ultrafiltration membranes for the removal of the remaining suspended solids, bacteria and viruses. As with sand filtration, the principle of ultrafiltration is physical separation. Ultrafiltration involves a pressure-driven separation of materials from a feed solution. The technology is used to remove particulate and microbial contaminants, but it does not remove ions and small molecules. The extent to which dissolved solids, turbidity and microorganisms are removed is determined by the size of the pores in the membranes. Substances that are larger than the pores in the membranes are fully removed. Substances that are smaller than the pores of the membranes remain or only partially removed.

After this stage of treatment, the water is of suitable quality to be reused in the factory resulting in an overall decrease of water consumption. The concentrate of the ultrafiltration is recycled back to the activated sludge system.

Before discharge, one additional treatment process is required as the dissolved salts are not yet removed by any of the preceding treatment steps. For this, reverse osmosis (RO) technology will be used.

Reverse osmosis (RO) is a demineralization process that relies on a semi-permeable membrane separate of dissolved solids from a liquid. The semi-permeable membrane allows liquid and some ions to pass, but retains the bulk of the dissolved solids.

By applying a pressure, greater than the osmotic pressure, water is forced to pass through the membrane in the direction reverse to that of osmosis. Water now moves from a high-concentration solution to that with the low concentration solution. In this manner, relatively pure water passes through the membrane while dissolved solids are retained. Hence, the water is purified or “demineralized,” and the solids are concentrated.

Part of the product water will be reused in the factory while the other part will be mixed with the non-treated part of the secondary effluent.

The concentrate solution of the RO will be further concentrated in an evaporation step. The end products of this evaporation are a concentrated solution containing all minerals suitable to be used in agriculture and a condensate stream that will be mixed with the final effluent.

Disinfection

A final treatment step on the combined effluent from the secondary clarifier, RO permeate and condensate stream of the evaporation is a disinfection step with ultraviolet (UV) light.

The mechanism of disinfection by UV light differs considerably from the mechanisms of chemical disinfectants such as chlorine and ozone. Chemical disinfectants inactivate microorganisms by destroying or damaging cellular structures, interfering with their metabolism, and hindering growth. UV light inactivates microorganisms by damaging their genetic material, thereby preventing them from replicating. A microorganism that cannot replicate cannot infect a host.

After the disinfection, the effluent complies with all required standards and can be discharged into receiving waters (i.e. IID's Rose Drain).

Biomass Treatment

Any excess biomass from the anaerobic digestion and/or the secondary treatment will be further treated and dewatered in the dewatering plant. The mechanical dewatering consists of centrifuges, separating the biomass from the water through sedimentation and centrifugal force. The end product is a sludge cake that can be applied as an agricultural fertilizer.

Odor Treatment

Full odor control measures are included, so as to obtain an odor free facility. The most common form of odor consists of organic compounds and inorganic substances such as hydrogen sulfide and ammonia. All odor producing basins, tanks, etc. are closed and contaminated air is sent to an odor removal system consisting of a biofilter followed by an activated carbon filter.

General

Cooling Water System

All of the project's cooling water systems will be closed-circuit systems, thereby reducing the requirement for raw, untreated water. Raw water will only be used for make-up supply for the cooling water system. The cooling method used for the fermentation cooling water, either by cooling tower or by spray pond, will be decided based on the economics of the two systems. All bearing cooling water for the ethanol production and the electricity generating element will be separated and will make use of closed circuit cooling towers.

Electrical Reticulation

Electricity will be generated at 13.8kV and 60Hz. Each dedicated area will be served by its own transformer, reducing the voltage to 440V. Interconnection to the existing IID grid, including safety devices and equipment, will be provided. Further details of the interconnection will be finalized during the detailed engineering phase.

Buildings and Civil Works

Laboratory

The project includes a fully functional ethanol facility and cane testing laboratory. The cane payment system, capable of linking the weighbridges to the cane laboratory for payment purposes, will be included in this area. The laboratory will be constructed and fully functional in order to perform cane sample analysis during the construction phase. This building will be located in the central portion of the facility north of the truck parking area east of the Industrial Operations Center.

Administrative Offices

A main office building is proposed to house all senior management and administrative personnel. This building will be constructed in the early phases of construction in order to be available to house the Owners' Team members. The building may be a one or two-story structure and will be located in north of the car parking area to the east of the restaurant and recreation area. This building will be constructed in the early phases of construction in order to be available to house the Owners' Team members.

Industrial Operations Center

A single-story office building is proposed to accommodate all plant management (operations and maintenance) personnel. This building will be constructed in the early phases of construction in order to be available to house the Owners' Team members. This building will be located in the central portion of the facility north of the truck parking area to the west of the Laboratory.

Warehouse and Industrial Workshops

A single-story warehouse, including the appropriate offices, will be constructed for the accommodation of all required facility spares, consumables, chemicals and all other goods required to operate and maintain the facility. This building will be located in the central portion of the facility north of the truck parking area and west of the Industrial Operations Center.

Time Register

A small building with the time register will be located north of the car parking area near the restrooms, dressing room and infirmary building and the restaurant/recreation building.

Restrooms, Dressing Rooms and Infirmary

A building housing to restrooms, dressing rooms and an infirmary for the employees will be located to the northwest portion of the car parking area. Another building devoted to restrooms and dressing rooms will be located in the northwest corner of the truck parking area.

Restaurant and Recreation Area

A building providing dining facilities and recreational facilities for employees will be located in the northwest portion of the car parking area.

2.1.7 FACILITY OPERATING DATA

A. OPERATIONAL TIME LIMITS

The facility will operate for 24 hours, 7 days a week over 48 weeks of the year (crushing season), with bi-weekly operational maintenance completed during alternating 8 hour and 16 hour time periods. The remaining 4 weeks of the year (every July) will be used for annual maintenance (off-crop), during which time all plant operations will cease.

During this off-crop period, all major maintenance and inspections commensurate with the various manufacturers' recommendations will be undertaken. As examples, this would include stripping the turbo-generators to inspect the internal components for wear and/or damage, and stripping and overhauling the drying mills.

B. NUMBER OF ON-SITE EMPLOYEES

The ethanol, electricity and bio-methane facility will employ a total of approximately 236 employees. Day staff, including management, will total 61 employees. The balance of 175 employees will be distributed over a 3-shift system. Only personnel required to manage, operate and maintain the facility are considered on-site employees. Truck drivers, harvester drivers and field workers are not considered on-site employees and accordingly are not included in the 236 total.

C. TRAFFIC VOLUME

During operations, the project would generate traffic from a variety of sources. **Table 2.0-4** summarizes traffic estimates, based on 336 (48 weeks) operating days during the crushing season.

TABLE 2.0-4
SUMMARY OF OPERATIONAL TRAFFIC

Source	Number of Trips
Food and beverage vendor	3 per day
FedEx/UPS truck, etc	1 per day
Service Trucks	10 per day
Feedstock delivery trucks	355 per day
Ethanol tanker trucks	24 per day
Employee vehicles	236 per day
TOTAL	**626 per day**

Source: CE&P 2012a.

D. ACCESS AND PARKING

Access to the site is proposed from two points off of Keystone Road. Both entrance to and exit from the site will be allowed from these points. A guard house will be placed at both access points. Feedstock semi-trailer truck accumulation will be accommodated by a minimum of 16 temporary parking bays within the facility grounds.

E. OVERALL HEIGHT OF FACILITY

Overall height of the ethanol, electricity and bio-methane facility is estimated to be 90 feet with the boiler stacks at least 95 feet in height. Final heights of all structures will be confirmed during the detailed engineering phase. Structures over 80 feet require a Variance from the County.

2.1.8 UTILITIES

A. SANITARY WASTEWATER

Sanitary wastewater will be generated from toilets, showers and sinks. Currently, the project site is not served by municipal sewer infrastructure. Thus, an on-site domestic engineered wastewater system is proposed which would comply with all applicable regulations and standards of the Imperial County Department of Public Works; Imperial County Public Health Department, Environmental Health & Consumer Protection Services; and the Regional Water Quality Control Board (RWQCB).

Sanitary wastewater will be treated as follows with many aspects similar or identical to those described as part of the Industrial Wastewater Treatment process.

Pre-Treatment

Sanitary wastewater from the facility will be collected and pumped to a pretreatment consisting of:

1. A screening for the removal of all large objects (e.g. cans, rags, sticks, plastic packets)
2. Grinding of solid particles

From the pretreatment, the sanitary wastewater will be pumped to the next step of the process, the secondary treatment.

Secondary Treatment

The proposed secondary treatment is an activated sludge system. This system is a biochemical process for treating sewage that uses air (or oxygen) and microorganisms to biologically oxidize the organic pollutants. The activated sludge process includes an aeration tank (where air is injected and thoroughly mixed with sanitary wastewater) and a settling tank (usually referred to as a "clarifier" or "settler") to allow the biomass to settle.

A biological nitrogen removal process will be incorporated in order to protect the receiving waters from eutrophication (i.e. an increase in nutrients such as nitrogen and phosphorus that increase algal growth).

The biological removal of nitrogen is a three-step process. In the first step, ammonia is oxidized to nitrite by a first group of bacteria. In the second step the nitrite is further oxidized to nitrates by another group of bacteria. These two groups of bacteria, known as "nitrifiers," are strict "aerobes" which indicates that free dissolved oxygen is required for the bacteria to work. The necessary dissolved oxygen is supplied by aeration.

In the third step, nitrates are reduced and converted into nitrogen gas by a third group of bacteria, known as "denitrifiers." This process is performed under anoxic conditions (i.e. when the dissolved oxygen concentration is very low). The bacteria use the nitrates as an oxygen source, and the incoming wastewater serves as a carbon source.

After the secondary treatment, an effluent is obtained that is almost suitable for discharge.

Tertiary Treatment

The first step of the tertiary treatment is a filtration step with sand filters for the removal of suspended solids. In the sand filtration, the remaining suspended solids in the effluent of the secondary clarifier are further removed in order to obtain effluent values low enough to go to ultrafiltration. The retained suspended solids are continuously washed out of the filter bed and recycled back to the activated sludge system.

After sand filtration, the water is further treated by ultrafiltration membranes for the removal of the remaining suspended solids, bacteria and viruses. Similar to sand filtration, the principle of ultrafiltration is a physical separation. Ultrafiltration involves a pressure-driven separation of materials from a feed solution. The technology is used to remove particulate and microbial contaminants, but it does not remove ions and small molecules. The extent to which dissolved solids, turbidity, and microorganisms are removed is determined by the size of the pores in the membranes. Substances that are larger than the pores in the membranes are fully removed. Substances that are smaller than the pores of the membranes are remain only partially removed.

The concentrate of the ultrafiltration is recycled back to the activated sludge system. Before discharge, RO treatment is used to remove dissolved salts not previously removed by any of the preceding treatment steps.

Disinfection

A final treatment step is disinfection with UV light. After the disinfection, the effluent complies with all required standards and can be applied as irrigation water for landscaped areas.

Odor Treatment

As with the industrial wastewater treatment process, full odor control measures are included in the sanitary wastewater treatment process. All odor producing basins, tanks, etc. are closed and contaminated air is sent to an odor removal system consisting of a biofilter followed by an activated

carbon filter. Further discussion and details regarding sanitary wastewater are provided in Section 4.12, Public Services and Utilities.

B. WATER

Infrastructure

Water storage, treatment and pumping facilities will all be located on-site. Currently, no domestic water delivery infrastructure is available at the project site thus all facilities will be constructed as part of the proposed ethanol, electricity and bio-methane facility. The project will contract with IID to deliver up to 3,000 acre-feet of water per year via the Rose Canal at gate 76-A north of the site. Water will be transferred to the raw water storage pond located on the western side of the site (south of the substation) via a freshwater pipeline. The storage pond will be designed to hold six days of water supply plus fire ring main flow requirements. IID water will gravity flow to the raw water storage pond and be pumped to the water treatment plant as needed. After passing through the treatment plant, water will be pumped into the treated water storage tank. A potable water booster pump station will pump water from the treated storage tank to the water distribution system. The distribution system will be looped within the project, which will allow the project to be phased while still maintaining the infrastructure necessary to provide fire flow. Design and operations of the raw water delivery systems, storage ponds, water treatment facilities, and distribution systems will conform to the engineering guidelines of the IID.

Usage

As shown in **Table 2.0-5**, the project is anticipated to use approximately 2,443 acre-feet of water per year for potable use, fire suppression, and plant processes (e.g. cooling water make-up, carbon dioxide scrubbing, etc.). The project will treat approximately 21 acre-feet of water per year for potable use (i.e. external use only such as hand-washing, toilets, etc.), using two on-site, 5.0 cubic meters per hour (m^3/hour) package water treatment units. The treatment facility will qualify as a public water system designed to meet Title 22 regulations and as well as California Health and Safety Code statues pertaining to drinking water. Design and operation of the water system will comply with the requirements of the California Department of Environmental Health Services, the National Fire Protection Code, IID specifications and the County Department of Public Works. However, the Applicant is prepared to use a California Certified Water Supplier to provide drinking water until such time that the water treatment plant is certified.

TABLE 2.0-5
PROJECT WATER USES

Use	Acre-Feet per year
Raw Water for Cooling Tower of Process (Make up)	793
Raw Water for Water Treatment Station (Use in Process)	1,072
Raw Water for Water Purifier (Potable Water)	21
Raw Water for imbibition Diffuser	443
Raw Water for CO_2 Column (Fermentation)	89
Raw Water for General Uses	25
TOTAL RAW WATER USAGE	**2,443**

Source: Uni-Systems 2013.

Water storage, treatment and pumping facilities will all be located on on-site. The source of the external freshwater for CE&P is anticipated to be irrigation water made available under a supply contract with the IID. Water will be obtained from the Rose Canal at gate 76-A, located north of the proposed plant site. Water will be transferred to the raw water storage pond located on the western side of the site via a freshwater pipeline. The storage pond will be designed to hold six days plus fire ring-main flow requirements. The water from the IID will flow by gravity to the raw water storage pond and then will be pumped to the water treatment plant when needed. Once water passes through the treatment plant, it will be pumped into the treated water storage tank. A potable water booster pump station will pump water from the treated storage tank to the water distribution system. The distribution system will be looped within the project, which will allow the project to be phased while still maintaining the infrastructure necessary to provide fire flow. Design and operations of the raw water delivery systems, storage ponds, water treatment facilities, and distribution systems will conform to the engineering guidelines of the IID.

C. Storm Drainage

Storm drainage will be provided on-site in a self-contained retention pond. The pond will be located in the southeast corner of the site. The pond will capture runoff created on-site during storm events and will be sized per the Imperial County requirements of 3 inches across the entire site without using a reduction for run-off coefficient. The retention basin is to empty into IID drains surrounding the property within 72 hours after receiving water.

D. Electrical

The project is adjacent to a power line that is owned and maintained by the IID. A temporary connection is proposed for the construction phase, whereby construction power can be sourced from the grid. In addition, the standby diesel generator will be ordered and commissioned early during the construction phase in order to supplement any power drawn from IID.

E. Telephone and Internet

Telephone and internet service will be provided by AT&T. The Applicant will consult with AT&T regarding service connections for telephone and internet.

F. Natural Gas

Initial start-up of the boilers will require natural gas. The boilers will be sized to operate at 25 percent maximum capacity rating (MCR) on gas alone. Under normal operating circumstances, no gas will be burned in the boilers. Instead, gas will be generated in the Anaerobic Digesters and piped into the SoCalGC pipeline as a sale product of the project. The connection to the SoCalGC pipeline will occur in Keystone Road. All procedures and standards of SoCalGC and the State will be adhered to in constructing and operating this connection.

G. On-Site Fire Equipment

The project includes the production and handling of volatile materials as well as specialized on-site fire prevention equipment. The facility will have an anunciator panel (a system to alert operators of alarm conditions in the plant) that will be protected by a smoke detector as required by code. It will be installed where site personnel can have access to it 24 hours a day, 7 days a week (i.e the industrial operation center). Fire hydrants will be strategically located to best serve the site with a flow rate of no less than 2,500 gallons per minute (GPM). Some hydrants will have monitors on them with eductor hoses or piped foam concentrate to extinguish an ethanol fire. All fire hydrants will meet the Imperial

County Fire Hydrant requirements. Foam concentrate type (alcohol-resistant) and quantity will be determined at a later date by the Fire Department. Sprinkler systems, infra-red and heat detectors will also be installed in some areas of the facility. A line detector may also be installed (de Boom 2012).

2.1.9 LIGHTING, FENCING AND LANDSCAPING

The project would include onsite lighting for the proposed office building, parking lot, power poles and other operational lights. Lighting poles will be located around the roadways and parking areas of the proposed project area. Details on height and number of poles will not be available until detailed engineering plans have been prepared.

A 10-foot tall chain link fence will surround the perimeter of the project site.

A Landscaping Plan would be prepared as required by the County prior to approval of the proposed project. The plan will demonstrate the project's consistency with Title 9, Division 3, Section 90302.03 of the County Zoning Code, "Landscaping Standards – Industrial Uses" (Imperial County 1998). Landscape materials selected will be based on the principles of "xeriscape" design (i.e. landscape that minimizes the need for supplemental water and takes into account the regional and microclimatic conditions of the site). Landscaping will be planted along approximately a one-quarter mile segment of the site's frontage adjacent to Keystone Road. The segment will stretch from the western driveway to eastern driveway. Trees will also be planted along internal roadways in the truck parking area and around a turf area south of the warehouse and industrial workshops, industrial operation center, and laboratory.

2.1.10 PUBLIC SERVICES

A. FIRE PROTECTION

Fire protection services to the project site would be provided by the Imperial County Fire Department (ICFD). The Applicant has engaged the ICFD throughout the planning process to ensure that all fire requirements are met and that adequate emergency access is provided. A full discussion of Fire Protection is provided in Section 4.13, Public Services and Utilities.

B. LAW ENFORCEMENT

The Imperial County Sheriff Department provides law enforcement services to the project site. In addition, the project includes two guardhouses that will be staffed 24 hours a day, 7 days a week to provide on-site security. Further discussion and details regarding law enforcement service is provided in Section 4.13, Public Services and Utilities.

C. SOLID WASTE PICK-UP AND DISPOSAL

The project would generate a variety of waste and trash in association with the various activities occurring on-site. These include laboratory waste, medical ambulatory hazard waste, and trash from common areas. Ambulatory waste can be disposed of in a landfill or septic tank. Trash from common areas will be separated for recycle or disposal. Ferrous and nonferrous scrap as well as used tires and other rubber materials will be sold. The Applicant will contract with a local recycling and disposal service to provide solid waste and recycling pick up. A full discussion of provision of solid waste service is provided in Section 4.13, Public Services and Utilities.

2.1.11 FEEDSTOCK SUPPLY

The other component of the ethanol, electricity and bio-methane facility is feedstock supply. A reliable, ratable and readily accessible supply is crucial to the operation of the facility. The Imperial Valley is well

suited for growing both sugarcane and sweet sorghum. Each acre of seed sugarcane can seed six to ten new acres that mature in about 12 months on average. This rapid growth cycle will enable CE&P to increase its sugarcane acreage to the required 41,000 acres, supplemented by 33,000 acres of sweet sorghum grown seasonally by the time the project begins operation. While specific fields where these crops will be grown have not been identified, most of the feedstock acreage will likely be grown within 15 miles of the ethanol, electricity and bio-methane facility. Furthermore, all acreage where the feedstock will be grown is currently in production or has been cultivated. No new acreage previously not in agricultural production will be converted to grow the feedstock.

CE&P's agricultural program has been established with the assistance of, and will be managed by, experienced Imperial Valley farmers with oversight from global expert Booker Tate, Ltd.

CE&P will enter into preferred "contract farming" arrangements on a cost-plus guaranteed profit basis with local farmers. This method provides the farmers with a superior level of profitability relative to other alternatives while largely insulating CE&P from spiraling feedstock market prices that proved so detrimental to corn-based ethanol and bio-diesel producers over the past several years.

2.1.12 ENVIRONMENTAL ISSUES AND LIMITS

CE&P and Uni-System have given special emphasis to the process design with regard to the project's potential impact on the environment of the Imperial Valley. Federal, state and local regulations have been taken into consideration in selecting the industrial processes in order to keep solid, liquid and gaseous effluents within the permissible limits.

A. AIR EMISSIONS

The project will emit regulated gaseous pollutants in the form of: 1) the boilers' flue gases; 2) fugitive emissions from several items of process equipment (specifically in the distillation and dehydration sections); and 3) from the ethanol tank farm.

All emissions will be controlled with appropriate pollution control systems meeting Best Available Control Technology (BACT) requirements. The project would generate volumes of emissions that are below the Federal Major Source annual emissions threshold levels. However, emissions will be above Imperial County offset threshold of 25 tons per year. The project will be designed to minimize emissions in order to reduce the requirement to furnish Emission Reduction Credits (ERCs).

Imperial County is also currently an attainment area for Carbon Monoxide (CO) and therefore no offsets are required. However, information is available on level of CO emissions provided by the project as required to complete the permitting process.

Imperial County is a nonattainment area for ozone. Therefore, project emissions of both Oxides of Nitrogen (NOx), and Volatile Organic Compounds (VOC) are subject to offset requirements. Imperial County is also a non-attainment area for Particulate Matter less than 10 microns in diameter (PM_{10}), which is also subject to the offset requirement of 25 tons per year.

The project will incorporate the following control technologies:

- Both boilers will include electrostatic precipitators (ESPs) to minimize PM_{10} in the emissions, and selective catalytic reduction (SCR) systems to reduce NOx emissions.
- The distillation element of the project, the equipment scrubbers, and ethanol tanks will be provided with Vapor Recovery Units (VRUs) using either special selective membranes or flares, to separate the VOC from the clean gas, primarily CO_2, which is eventually released into the atmosphere. Where VRUs are used, they will also help reduce losses in ethanol.

- All large distillate tanks will be fitted with internal floating roofs as required by Code.

The project would also generate odors in association with operation of the facility. These will be analyzed further in Section 4.4, Air Quality of this EIR.

B. EFFLUENT DISCHARGE

The industrial effluent discharge levels for the project will be in accordance with the requirements of the Water Quality Control Plan (The Basin Plan) for the Colorado River Basin Region. The Basin Plan was prepared by the RWQCB, Colorado River Basin Region, in accordance with criteria contained in the California Porter-Cologne Water Quality Control Act, the Federal Clean Water Act, and other pertinent state and federal rules and regulations.

The most likely disposal of the final discharge of effluent from the project after treatment will be into the IID main drain located near the southeast corner of the site. This ditch has sufficient capacity to handle the 4 cubic feet per second (CFS) effluent stream. The drain flows northeast approximately 2 to 3 miles where it is lifted by IID pumps approximately 8 feet, then gravity flow to the Alamo River and eventually to the Salton Sea.

The characteristics of industrial effluent discharged from the facility will be required to comply with the objectives of The Basin Plan as described in Chapter II (General Surface Water Objectives), and Chapter III (Specific Surface Water Objectives) in the Sub-Chapter III-C – Salton Sea.

The industrial effluent will be primarily treated in a bio-digestor where almost 85 to 90 percent of the chemical oxygen demand (COD) is removed with production of biogas. The pre-treated effluent will be subsequently processed in a secondary aerobic system with activated sludge which removes almost 85 to 90 percent of the residual COD and produces a residual TDS of 6,000 to 7,000 ppm. A portion of this stream (approximately 60 percent of the total) would be treated in a tertiary system to eliminate the residual organic matters (COD, biological oxygen demand [BOD]) and the other inorganic dissolved solids. The residue (practically pure water) would be used to dilute the 40 percent stream flowing out the secondary treatment to produce final effluent consistent with the requirements of The Basin Plan.

The design of the industrial wastewater treatment plant would allow ample flexibility to mitigate the risks of non-compliance, especially in the tertiary treatment where ultrafiltration and RO are performed in skid mounted modular systems. Where the inflow level of pollutants of the total effluent is higher than predicted, or requirements for the level of discharge will eventually be more restrictive, additional modules of the tertiary treatment can be installed. Effluent and receiving waters will be discussed in Section 4.11, Hydrology and Water Quality of this EIR.

C. SOLID RESIDUALS

The main solid residuals of the facility are ashes from the power plant boilers. Ashes are typically composed of inert stabilized inorganic materials. The quantity and ash composition varies with the characteristics of the feedstock; however, the expected quantity is approximately 1.5 to 2.0 percent of the bagasse burned in the boiler. At maximum boiler output, the quantity of ashes will be approximately 22,000 tons per year.

D. HAZARDOUS MATERIALS

Hazardous materials will be used and stored on the project site. Some materials are chemicals that are necessary for production of ethanol (e.g. sulphuric acid) or fueling vehicles (e.g. diesel). Other hazardous materials would be generated during routine operations including lube oil and grease used in the facility for bearings, gearing and in the workshop. Used lubricants will be collected and sold. The estimated

quantity is 4.4 tons per year. A full analysis of the various types of hazards will be discussed in Section 4.10, Hazards and Hazardous Materials.

E. NOISE

Machines and equipment on the project site would generate noise during operation of the ethanol, electricity and bio-methane facility. Noise emissions would be generated from both fixed and mobile sources. Fixed noise sources include equipment associated with industrial processes to produce ethanol, electricity and bio-methane. Mobile noise sources include agricultural machines, trucks and vehicles involved in the operations of cultivation, cutting, loading, cane/final product and derivatives transport (CE&P 2012b). A full analysis of noise will be provided in Section 4.8, Noise.

2.2 ETHANOL, ELECTRICITY AND BIO-METHANE FACILITY CONSTRUCTION

The following discussion provides an overview of the various aspects of project construction.

2.2.1 CONSTRUCTION ACCESS

Site access during construction will be made available at the "employee" entrance along Keystone Road approximately 3,300 feet west of SR 111. The "Feedstock" access area, which is approximately 1,200 feet west of the "employee" entrance, will be under construction with the installation of the two weighbridges and control office. Once completed, the "Feedstock" entrance will also be available for use during construction as a second access.

2.2.2 STAGING AREAS

Each contractor will be allocated a staging area, within the site perimeter suitable to the location of their construction activities. These areas will be clearly demarcated and fenced off by each contractor for safety and security reasons.

A fenced off area will also be demarcated for worker parking separate from the various contractor staging areas.

2.2.3 SITE PREPARATION

The project site will be cleared of all existing debris and vegetation. All sub-grade tile drains 8-inches in diameter and larger will be crushed in place and backfilled with compacted soil. Organic material (roots, vegetation, etc.) greater than one-half inch diameter should be hauled from the site and not used as fill (LandMark 2012, p. 15).

2.2.4 EXCAVATIONS, EARTHWORK AND FOUNDATIONS

Per the Geotechnical Report (LandMark, 2012) prepared for the proposed project, the existing surface soil within the building locations for the warehouse and industrial workshops, industrial operations center, laboratory and other light building foundation areas should be removed to 3.5 feet below the building pad elevation or existing natural surface grade (whichever is lower) extending five feet beyond tall exterior wall/column lines (including adjacent concrete areas). Exposed subgrade should be scarified to a depth of 6 inches, uniformly moisture conditions to 5 to 10 percent above optimum moisture content and recompacted to 85 to 90 percent of the maximum density (LandMark 2012, p. 15).

Large, heavy structures may be placed on structural mat foundations. The existing surface soil within the mat foundation areas should be removed to 12 inches below the bottom of the mat foundation elevation or existing grade (whichever is lower) extending five feet beyond the mat foundation. Exposed subgrade should be inspected by the geotechnical engineer and if found to be loose, shall be scarified to

a depth of 6 inches uniformly moisture conditions to 5 to 10 percent above optimum and recompacted to 85 to 90 percent of the maximum density determined (LandMark 2012, p. 16).

2.2.5 SOIL IMPORT / EXPORT

Soil import and export is expected to be in the order of 53,400 cubic yard (approximately 1,441,800 cubic feet) over the course of the construction period. This an over-estimate based on the approximate quantity of concrete to be installed (which is in turn based on the tonnage of equipment) multiplied by three. Approximately one third of the soil would be exported and two thirds would be imported as "free" soil. A portion of the free soil would be used in manufacturing the concrete itself. Final estimated quantities will only be available at the conclusion of the detailed engineering phase, projected to be during September 2013.

2.2.6 CONSTRUCTION WORKFORCE

Following six months of engineering, construction will be undertaken over an 18 month period. The average workforce is expected to be around 300 personnel. During the peak construction period, the workforce could reach but not exceed 770 workers.

All equipment will be sourced from companies in Brazil. As such representatives of these companies will supervise the installation of the equipment at the facility. Rather than using foreign labor, construction companies from the U.S., particularly California and the Imperial Valley (should the required skill sets exist), will be contracted to complete the construction and installation activities.

2.2.7 WATER USE

Construction water will initially be trucked in from suitably qualified service providers during the early construction of the raw water receiving system.

2.2.8 DIESEL GENERATORS

The project will require the use of one 1,000 kW diesel generator for construction power, until such time that the IID supply substation is commissioned.

2.2.9 ELECTRICAL CONNECTIONS

A temporary connection to the IID 92 kV power line on Keystone Road will be requested in order to partially eliminate the use of the construction diesel driven generator. The temporary connection is estimated to take up to six months to arrange. Thus, the diesel generator is anticipated the source of power the first six months of the construction period.

2.2.10 WATER AND WASTEWATER

Drinking water (most likely bottled water) will be supplied by the contractors for their workforces.

Temporary wastewater facilities will be supplied by a service company in the form of portable units of the chemical type serviced on a daily basis.

2.2.11 CONSTRUCTION SCHEDULE

Construction will begin after approximately six months of final engineering and design. The construction period is estimated to be an 18 month process beginning in the third quarter of 2013 following completion of the CEQA process. Total engineering and construction will take approximately 24 months.

The proposed project will include all typical construction activities, with the exception of demolition. The construction period will be characterized by a number of indistinct "phases." The phases are indistinct in that there will be a large degree of overlap of these "phases" because the project will be fast-tracked. During the height of construction, a number of activities, including all trade disciplines, will be undertaken simultaneously. The "phases" can be divided into two major categories: site grading and building/structure construction. These categories can be further broken down and generally characterized as follows:

- Site grading - November 18, 2013 – December 18, 2013
- Concrete (civil) works - November 12, 2013 – April 15, 2014
- Structural works – December 18, 2013 – March 11, 2015
- Building works – November 1, 2014 - March 16, 2015
- Installation of equipment - November 1, 2014 - March 16, 2015
- Electrical installation – August 19, 2014 – March 27, 2015
- Instrumentation installation - August 19, 2014 – March 27, 2015
- Commissioning - May 22, 2015 – July 1, 2015
- Close-out and hand-over to Client – July 1, 2015 – July 30, 2015

The contractors will concentrate construction efforts during the initial stages of the construction process on items with a long lead time. These will generally include the boilers (steam generators), turbo-generators and anaerobic digestors. The anaerobic digestors will be completed early during the construction phase in order to be able to "charge" them with suitable feedstock material required for the initial generation of biogas at start-up. The feedstock would be acquired from the local dairy industry.

Construction power will be supplied by the early deployment of the facilities' stand-by generator, currently planned as being a 1,000 kW Caterpillar stationary unit. The use of this generator will be phased out as power from the grid and the requisite electrical infrastructure is available for use. Power from the grid and requisite electrical infrastructure is anticipated to begin six months into the construction period.

2.2.12 CONSTRUCTION EQUIPMENT

The motorized equipment listed below in **Table 2.0-6, 2.0-7 and 2.0-8** would be expected to be used during the short-term grading, construction, and paving activities. The equipment would not be used simultaneously.

TABLE 2.0-6
PROPOSED GRADING EQUIPMENT

Type of Equipment	Quantity
Excavators (180 hp)	8
Graders (174 hp)	4
Off-Highway Trucks (417 hp)	8
Rough Terrain Forklifts (9 4 hp)	8
Rubber Tired Loaders (165 hp)	4
Scraper (313 hp)	4
Skid Steer Loader (62 hp)	4
Tractor/Loader/Backhoes (79 hp)	4
Trencher (82 hp)	4

Source: Uni-Systems 2012. Note: hp = horsepower

TABLE 2.0-7
PROPOSED CONSTRUCTION EQUIPMENT

Type of Equipment	Quantity
Concrete/Industrial Saw (84 hp)	4
Cranes (190 hp)	8
Crawler Tractor (143 hp)	4
Excavators (180 hp)	8
Grader (174 hp)	4
Off Highway Tractor (255 hp)	4
Off Highway Trucks (417 hp)	8
Other Equipment 190 hp)	4
Rough Terrain Forklifts (94 hp)	8
Rubber Tired Loader (165 hp)	4
Scraper (313 hp)	4
Skid Steer Loaders (62 hp)	8
Tractor/Loader/Backhoe (79 hp)	4
Trencher (82 hp)	4

Source: Uni-Systems 2012.

TABLE 2.0-8
PROPOSED PAVING EQUIPMENT

Type of Equipment	Quantity
Paver (132 hp)	4
Paving Equipment (111 hp)	4
Rollers (114 hp)	8

Source: Uni-Systems 2012.

2.3 ALTERNATIVES

2.3.1 ALTERNATIVE 1 – REDUCED THROUGHPUT ALTERNATIVE

Under this alternative, biogas may be burned as a supplementary fuel in place of natural gas in the boilers during normal operations and/or if the quantity of bagasse is reduced or not sufficient to generate a total of 50 MW.

2.3.2 ALTERNATIVE 2 – REDUCED ETHANOL PRODUCTION ALTERNATIVE

Under this alternative, production of ethanol would be reduced by at least ten percent below the facility's design capacity of 66 million gallons per year to 60 million gallons per year in order to ensure that direct emissions from the facility are generated below the ICAPCD limit of 25,000 tons of carbon dioxide equivalent (CO_2e). The project would also result in a proportional reduction in bio-methane and a larger reduction (more than ten percent) in electricity generation for export.

2.3.3 ALTERNATIVE 3 – NO PROJECT ALTERNATIVE

Under this alternative, the proposed project would not be constructed on the project site. The existing uses on the site would remain unchanged and a Specific Plan Amendment, Conditional Use Permit (CUP), Zone Change and Variance would not be required.

2.4 INTENDED USES OF THE EIR/AUTHORIZING ACTIONS

2.4.1 DISCRETIONARY ACTIONS AND APPROVALS

A. COUNTY OF IMPERIAL

In conformance with Sections 15050 and 15367 of the CEQA Guidelines, the County of Imperial has been designated the "lead agency," defined as, "the public agency which has the principal responsibility for carrying out or approving a project." The following are discretionary actions and approvals by the Imperial County Planning Commission and/or Board of Supervisors for the proposed project:

Certification of the Final EIR

After the required public review for the Draft EIR, Imperial County will respond to written comments, edit the document, and produce a Final EIR to be considered for certification by the Planning Commission and/or Board of Supervisors prior to making a decision on the project.

Mitigation Monitoring and Reporting Program

A Mitigation Monitoring and Reporting Program (MMRP) will be adopted as required by CEQA Guidelines Section 15097 to ensure that mitigation measures identified in the EIR are implemented as appropriate.

Conditional Use Permit (CUP 12-0015)

The proposed project will require approval of a CUP by Imperial County to allow construction and operation of the proposed ethanol, electricity and bio-methane facility.

Specific Plan Amendment (SP 12-0002)

The amended Mesquite Lake Specific Plan will include a 158.2 acre parcel area north of Keystone Road.

Zone Change (ZC 12-0003)

The proposed project requires a zone change from the current A-2, General Agriculture zone to the MLI-3 zone (Mesquite Lake Heavy Industrial zone).

Variance (V 12-0011)

A variance is required to accommodate the overall 90 foot height of the ethanol, electricity and bio-methane facility. The both the existing and proposed zoning allow for a maximum height limit of 80 feet. Boiler stacks would be at least 95 feet. The Applicant is seeking a Variance for structures exceeding 80 feet in height. However, structure heights will be confirmed during the detailed engineering phase.

Public Water System Permit

The project proposes to treat water on-site for potable uses (i.e. external use only including hand-washing, toilets, etc. Drinking water will be provided by a California Certified Water Supplier). The project will qualify as a public water system and will meet the regulations (Title 22) and statues California Health and Safety Code (CHSC) pertaining to drinking water, by the use of two, $5m^3$ (cubic meter)/hour modular units purchased in Brazil. Design and operation of the water system will comply with the requirements of the California Department of Health Services, County Department of Health Services-Environmental Health, the National Fire Protection Code, IID specifications and the County Department of Public Works.

Private Sewage Disposal Permit

The project includes construction of an on-site engineered wastewater system to treat sanitary sewage from sinks and toilets located in the various buildings throughout the site. Design and operation of the wastewater facility will comply with the requirements of the California Department of Health Services (DHS), Imperial County Public Health Department, Environmental Health & Consumer Protection Services (EHS), the RWQCB, and the Imperial County Department of Public Works (ICDPW).

Site Plan

Site Plan and Architectural Review is required for all non-residential projects and will be conducted for the proposed project.

B. IMPERIAL IRRIGATION DISTRICT (IID)

Various approvals may be required from IID prior to commencement of project construction. These include but are not limited to:

- Non-Agricultural Water Use Permit
- Drainage Agreement
- Abandonment Agreement
- Drainage Easement for Stormwater Pond
- Discharge Easement for Wastewater Treatment Facility
- Water Supply Easement from Rose Canal

C. IMPERIAL VALLEY ENTERPRISE ZONE JOINT POWERS AUTHORITY

The project site is immediately north of the Imperial Valley Enterprise Zone that encompasses the MLSP. The Applicant is planning to submit an application to the Imperial Valley Enterprise Zone Joint Powers Authority (IVEZ JPA) to have the project site included in the Imperial Valley Enterprise Zone.

2.4.2 SUBSEQUENT/CONCURRENT ENTITLEMENTS TO IMPLEMENT THE PROPOSED PROJECT

A variety of entitlement actions and permits will be required from Imperial County to implement the components of the proposed project:

- Grading Plan for the project site
- Construction Traffic Control Plan
- Building Permits
- Occupancy Permit
- Sewer and Water Systems by the RWQCB

2.4.3 DISCRETIONARY ACTIONS AND APPROVALS BY OTHER AGENCIES

Responsible Agencies are those agencies that have discretionary approval over one or more actions involved with development of the proposed project site. Trustee Agencies are state agencies that have discretionary approval or jurisdiction by law over natural resources affected by a project. These agencies may include, but are not limited to the following:

- U.S. Fish and Wildlife Service

  - Endangered Species Act consultation
- California Department of Fish Wildlife (Trustee Agency)
  - State Endangered Species Act compliance
  - Streambed Alteration Agreement (Section 1603 of the California Fish and Game Code)
- California Regional Water Quality Control Board (RWQCB) - Colorado River Basin, Region 7
  - Section 401 Water Quality Certification (if needed)
  - General Construction Activity Storm Water Permit and General Industrial Storm Water Permit issued through the National Pollution Discharge Elimination System (NPDES) (Clean Water Act Section 402)
  - Approval of a Storm Water Pollution Prevention Plan (SWPPP)
  - Approval of water and wastewater systems
- California State Historic Preservation Office (SHPO) consultation
- Imperial Irrigation District (IID) - Encroachment permit(s), Water Supply Agreement
- Imperial County Air Pollution Control District (ICAPCD)
  - Rule 801 compliance
  - Permit to demonstrate compliance with all applicable ICAPCD rules and regulations.
  - Permit to operate diesel generator during construction and on a stand-by basis during operation.
- Imperial County Fire Department (ICFD)
  - Approval of final design of the proposed fire system
- California Department of Toxic Substances Control (DTSC)
  - Review of Hazardous Materials Management Plan