

## **ATTACHMENT A**

# **SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT Initial Study/Environmental Checklist January 29, 2004**

*Prepared by*

**Pacific Ethanol, Inc.**

## **MADERA COUNTY ETHANOL PRODUCTION FACILITY**

### **PROJECT DESCRIPTION**



**July 2003**

**Project Location:**

Avenue 12, approximately 0.6 miles west of the  
intersection of Avenue 12 and Road 32

## **1. INTRODUCTION AND SUMMARY OF PROPOSED USE**

The proposed project will be developed at the site of the existing Coast Grain Company facility on Avenue 12 in the unincorporated area of Madera County. In the 1995 Madera County General Plan Update and the accompanying Environmental Impact Report the site was designated Heavy Industrial recognizing its historic use as a lumber mill and the use of the neighboring parcels for a steel fabricating plant and a large electrical substation. The site was then sold to Coast Grain which permitted and constructed an extremely large integrated grain receiving, storage, processing and shipment facility described in more detail below. Because of the height of the grain silos Madera County required a variance (#97-14) and environmental review of the proposed facility. During review of the variance application at the Madera County Planning Commission and Madera County Board of Supervisors, issues of road and train traffic, aesthetics, dust, noise, neighborhood compatibility and other matters pertaining to the site and the surrounding development plans were debated. Because the project operation and scope will be very similar to the operation planned and permitted by Coast Grain for the site, Madera County has determined that no County discretionary permits or additional environmental review is required or appropriate.

The project will receive corn via truck and rail, and produce ethanol for off-site use as an additive in motor vehicle fuel, and distiller grains for use locally as cattle feed. The existing grain receiving, storage, and shipment facility will continue to be operated at up to 50% of the original design capacity.

The existing corn silos and rail loop track will be utilized for the receiving and storage of corn. Additional facilities to be constructed will include:

- Expanded grain processing building
- Fermentation building and tanks
- Distillation, drying, and evaporation building
- Ethanol storage tanks
- Tanks for the storage of production materials
- Evaporation pond
- Natural gas-fired steam production facility

## **2. NEED FOR THE PROJECT**

This project will respond to the severe shortage of in-state production capacity for vehicle fuel oxygenates, such as ethanol. The federal Clean Air Act requires refiners to incorporate additives (oxygenates) designed to increase the combustion efficiency of the gasoline they produce. Until recently MTBE was the most commonly used oxygenate. However, this substance is a potential human carcinogen, and has been found in numerous ground water sources throughout California. The governor has ordered that MTBE use in reformulated gasoline be phased out by the end of 2003.

Ethanol is the most effective alternative to MTBE. At present, there is very little in-state production capacity, requiring that most of the 950 million gallons required per year, be imported from the Midwest.

Distillers Grains an additional product of ethanol production make a highly desirable protein feed for the dairy industry. Distiller's Grains are currently being imported from the Midwest by train for to feed local dairy cattle. The Madera Ethanol Project will provide local source of supply for this key ingredient to the dairy industry without increasing existing train or truck traffic to supply that feed.

### 3. PROJECT APPLICANT

Name	Pacific Ethanol, Inc.
Address	410 W. Fallbrook Suite 210 Fresno, California 93711
Contact	Tom Koehler 503 – 490-1070

### 4. SITE LOCATION AND GENERAL INFORMATION

Site Location and Address:	South side of Avenue 12, approximately 0.57 miles west of the intersection of Avenue 12 and Road 32, in the unincorporated area of Madera County
Property Owner:	Pacific Ethanol, Inc.
Assessor Parcel Number:	047-130-020
Zoning:	IH (Industrial, Urban or Rural, Heavy)
Site Size:	137.05 acres
Project Size:	137.05 acres
Existing Entitlements and Approvals:	Madera County Variance #97-14 (height) Mitigated Negative Declaration #97-14 Finding of Consistency with the Madera County Airport Land Use Plan
Existing Facilities and Structures:	Eight 170' tall grain silos (total height with elevators - 200'). Two 70' truck scales Grain unloading pit, conveyors, and loadout bins Natural gas fired boiler Roller mill building (7,800 sq.ft.) Office (4,000 sq.ft.)

Warehouse (30,500 sq.ft.)  
 Rail loop track

Uses Currently Permitted: Grain receiving, handling, storage, and loadout facility

Surrounding Land Uses: Industrial and Agricultural

**5. PROPOSED ADDITIONAL SITE DEVELOPMENT**

**All additional site development will be integrated with the extensive existing facilities and will consist of the following:**

**5.1 Paving and Grading:** The site is essentially flat and will require minimal grading. All roads, driveways, and parking areas will be paved with asphalt.

**5.2 Vehicle Parking Areas:** The number of on-site parking spaces to be provided will be:

Employee and visitors - 40  
 Trucks - 10

**5.3 Buildings**

Name/Use	Footprint	Height	Construction Materials/Type
Processing Building	75' x 125'	44'	Pre-engineered steel
Control Room and Laboratory	40' x 100'	15'	Concrete tilt-up
Distillation, drying, and evaporation	48' x 54'	32'	Pre-engineered steel construction
Administration (existing)	80' x 50'	24'	Concrete tilt-up
Wet grain storage	110' x 200'	32'	Pre-engineered steel construction

**5.4 Storage Facilities**

Name/Use	Number	Height	Capacity	Construction Materials
Corn Silos (existing)	8	200'	170,000 bushels each	Concrete
Ethanol Storage Tanks	2	35'	250,000 gallons each	Carbon steel

Name/Use	Number	Height	Capacity	Construction Materials
Ethanol Day Tank	1	33'	103,000 gallons	Carbon steel
Ethanol Off Spec Tank	1	33'	103,000 gallons	Carbon steel
Diesel Fuel	1	15'	5,000 gallons	Carbon Steel
Aqueous Ammonia	1	15'	12,000 gallons	304 Stainless steel
Enzymes (alpha amylase, etc.)	2	15'	12,000 gallons each	304 Stainless steel
Sulfuric Acid	1	15.5'	12,000 gallons	304 Stainless steel
Urea	1	12'	12,000 gallons	304 Stainless steel
Denaturant (gasoline)	1	20'	60,000 gallons	Carbon steel

**5.5 Evaporation Pond:** The system is designed to re-use all process water. Non-process water from the boiler blowdown, cooling towers, and evaporator condensate will be routed to an evaporation pond. The pond will have a surface area of approximately 1.5 acres and a depth of approximately 3 feet. The pond lining will consist of compacted native soils and clay.

**5.6 Steam Production Facility/Co Generation:** Two natural gas fired steam boilers, each with a rating of 75,600 MBtu/hour will be installed at the project site. The steam production facility will also include water treatment and condensate recovery equipment and a facility control system. The boilers will be equipped with ultra-low 9ppm NOx burners. The project may also decide to use a 12MW co generation combined combustion steam turbine to generate steam and electricity. Like the boilers the generator will be BACT equipment and will have 2.5 ppm NOx emissions. The Cogeneration unit will produce less emissions than the boilers. For the purpose of the project description we are using the higher emission unit to calculate the total emissions

**5.7 Rail Loop:** The site is bounded on the east by the BNSF rail line. A rail loop, approximately 8,500' in length, has been constructed on the site as part of the existing facility.

## 6. GENERAL PROCESS DESCRIPTION

The basis of the production of ethanol from corn is the conversion of starch to sugar, and then sugar to ethanol:

**Starch → Sugar → Ethanol**

This fermentation process is employed in many industries, such as winemaking and the production of distilled spirits.

- 6.1 Corn Delivery and Sampling: Corn will be delivered via unit train and truck. The facility will utilize approximately 35,600 bushels (640 tons) per day. The unit train will be positioned on the existing rail loop.

Incoming loads will be weighed and sampled.

- 6.2 Unloading and Storage: A diesel-electric engine will be used to move the rail cars around the rail loop. The rail cars will be positioned over dump pits and unloaded from the bottom. The corn will be conveyed to the grain storage silos.

- 6.3 Cleaning and Milling: The corn will be conveyed to a screening bin and then ground in one of two hammermills.

- 6.4 The ethanol production process includes six primary processes:

Mash Preparation: Mixing of the processed corn with water and enzymes such as alpha amylase. Aqueous ammonia is added to control the pH of the mixture.

Cooking and Conversion - In a series of steam cookers supplied with 60 psi saturated steam from the steam production facility, the complex sugars in the mash are broken down into simple (fermentable) sugars.

Fermentation - The mash is cooled and then mixed with yeast and additional enzymes in a series of fermentation tanks. After about 48 hours of fermentation, the resultant liquid will contain approximately 10% to 15% ethanol by weight.

Distillation - This process separates the ethanol from the carbon dioxide and water vapor and produces a liquid that is 95% ethanol and 5% water. Molecular sieves are used to remove the remaining water and produce 100% ethanol.

Storage - The ethanol will be combined with 5% gasoline to produce denatured ethanol. This product will be stored in carbon steel tanks equipped with tank vents and/or floating roofs, meters, filters, and pumps. When operating at capacity, the system will produce approximately 95,000 to 100,000 gallon per day.

Shipment - The denatured ethanol will be loaded into tanker trucks and hauled to refineries in Central and Southern California.

- 6.5 Cyclone dust collectors will be used to control dust during unloading, transfer, and processing of corn.

- 6.6 Re-use of process water. Process water from each step is re-introduced and re-used. No process water is discharged from the facility.

- 6.7 Processing and use of residuals

Distiller Grain: The primary by-product of the fermentation process is distiller wet grains (DWGS), a high value animal feed. This material will be processed to an approximate

67% moisture level, mixed with standard feed materials, and marketed to local dairy farms.

When the system is operating at capacity, approximately 825 tons of DWGS will be produced daily. Approximately 2,000 tons of DWGS will be stored on-site in an enclosed building. The DWGS will be hauled from the site in trucks on a daily schedule.

Carbon Dioxide produced during the fermentation process is collected and processed through a scrubber to recover ethanol and other organic compounds. The carbon dioxide (CO<sub>2</sub>) will be captured and sold into the beverage and dry ice markets.

## 7. PROJECT PRODUCTION PARAMETERS

<u>Material</u>	<u>Annual Quantity</u>	<u>Approximate Daily Quantity</u>
Corn Used	12,500,000 bushels	35,600 bushels
Ethanol Produced	35,000,000 gallons	98,000 gallons
Carbon Dioxide Produced	90,000 tons	325 tons
Wet Grains Produced (cattle feed)	289,000 tons	825 tons

## 8. EMPLOYEES/LOCAL ECONOMIC IMPACT

Total employment at the ethanol facility will be approximately 35 individuals. Current existing operational jobs for the grain facility is approximately 5 people. In addition to the 35 full time jobs the ethanol plant will support at least 25 more direct new local jobs for all of the trucking requirements of the plant. Production employees will work on a 3 shift per day, 7 day per week schedule. Administrative staff will work on a one shift per day, 5 day per week schedule.

It is estimated that construction of the project will create a one time boost to the economy of \$142 million and expand the local economic base by \$110 million. This estimate is based on an independent study done by AUS Consultants, a leading agricultural and commodity economic firm.

## 9. TRAFFIC

Most of the corn will be delivered to the facility via 110-car unit trains. A portion of the corn may be supplied from local sources, and therefore delivered to the facility in trucks. Ethanol and wet grains will be shipped from the site via truck.

### 9.1 Projected Traffic Volumes

	<b>Vehicles per day</b>			<b>Trips</b>	
Type of Vehicle	Existing Facility	Proposed Additiona	Total Project Vehicles	Trips per day	Peak Hour

	<b>Vehicles per day</b>			<b>Trips</b>	
		1			
Employee vehicles (cars and light trucks)	42	-7	35	70	10
Corn deliveries - Unit train (110 cars)	1 train every two weeks	0	1 train every 1.5 to 2 weeks	N/A	N/A
Grain Shipments (heavy trucks)	40	-20	20	40	5
Removal of Wet Grains (heavy trucks)	0	40	40	80	5
Ethanol shipments (heavy trucks)	0	14	14	28	5
Production supplies (misc. trucks)	3	0	3	6	1
CO <sub>2</sub> shipments (heavy trucks)	0	14	14	28	2
<b>Total</b>	<b>85</b>	<b>41</b>	<b>126</b>	<b>252</b>	<b>15</b>

If 20% of the corn were delivered in trucks from growers in the San Joaquin Valley, the project would generate approximately 12 additional heavy truck trips (6 vehicles) per day.

## 9.2 Traffic Routing

Trucks with production supplies and finished products (ethanol and wet grains) will travel on Avenue 12 between the SR 99 interchange and the project site. Employees and some delivery vehicles will utilize local County roads to access the project site.

## 10. ON-SITE VEHICLES

On-site mobile equipment will include:

- 1 wheel loader with diesel engine
- 1 forklift with propane engine
- 1 diesel-electric locomotive

## 11. UTILITIES

<b>Utility</b>	<b>Source</b>	<b>Usage</b>	<b>Approximate Requirement</b>



Utility	Source	Usage	Approximate Requirement
Natural Gas	Pipeline	Steam boilers	2,300 cu.ft./day
Steam	On-site steam production facility	Mash cookers	76,200 lb/hr
Water	On-site well	Boiler make-up (75%) and process needs (25%)	300 acre feet/year
Electricity	PG&E	Process equipment, lighting, office and test equipment	89,000 kWh/day

## 12. HOURS OF OPERATION

The existing facility was projected to operate from 6:00 AM to 10:00 PM, five days per week. Corn unloading was projected to occur from 7:00 AM to 11:00 PM, twice per month.

The proposed corn-to-ethanol facility will operate 24 hours per day, 7 days per week. The schedule for corn unloading will be similar to that for the existing facility. The facility will be shut down for approximately two weeks per year for maintenance.

## 13. MITIGATION OF POTENTIAL ENVIRONMENTAL IMPACTS

### 13.1 Air Quality

The stationary emission sources at the facility include grain handling, fermentation, distillation, combustion, storage tanks, ethanol loadout, and fugitives. Best Available Control Technology (BACT) will be employed for all sources.

The applicant will be submitting applications for a Permit to Construct and a Permit to Operate to the San Joaquin Valley Unified Air Pollution Control District.

All roads and parking areas will be paved.

### 13.2 Odor

Odors from the plant will be minimal. Common odor complaints about ethanol plants are associated with drying the distillers grains. The Madera ethanol facility will not be drying the grains and in addition all wet grains will be stored in enclosed silos with the emissions be routed back to the scrubber system and recycled.

### 13.3 Visuals

The plant will be set on the side of the existing grain facility. The highest building will be 44 feet high. There will also be landscaping along Avenue 12 to screen the plant.

### 13.2 Land use and Planning

The site is zoned for heavy industrial uses. The grain silos, unloading and loading facilities, and milling equipment exist, as is the rail loop. The new fermentation equipment and grain cookers will be located in the new main processing building adjacent to the existing feed mill.

### 13.3 Noise

The proposed processing equipment will be located in buildings, which will be set back from the property line.

### 13.4 Transportation and Traffic

The project will increase daily traffic by approximately 17 vehicles (34 trips). Total project traffic will be approximately 107 vehicles (214 trips) per day.

### 13.5 Water Resources

Construction of the evaporation pond will be subject to the provisions of Title 27 of the California Code of Regulations. A Report of Waste Discharge will be prepared and submitted to the Regional Water Quality Control Board as part of an application for Waste Discharge Requirements. The facility operator will also submit a Notice of Intent to comply with the provisions of the General Storm Water Management Plan for Industrial and Construction activities, and will prepare a Storm Water Pollution Prevention Plan.