FINDING OF NO SIGNIFICANT IMPACT

BIOMASS TO ETHANOL DEMONSTRATION PROJECT

BC INTERNATIONAL CORPORATION'S ETHANOL FACILITY IN JEFFERSON DAVIS PARISH, LOUISIANA

U.S. DEPARTMENT OF ENERGY
GOLDEN FIELD OFFICE

August 27, 1999

DOE/EA-1265

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BC INTERNATIONAL CORPORATION'S ETHANOL FACILITY
IN JEFFERSON DAVIS PARISH, LOUISIANA

AGENCY: U.S. Department of Energy, Golden Field Office (DOE/GO)

ACTION: Finding of No Significant Impact

SUMMARY: The U.S. Department of Energy (DOE) has prepared an Environmental Assessment (EA) to provide the DOE and other public agency decision makers with the environmental documentation required to take informed discretionary action on the proposed Biomass to Ethanol Demonstration project. The EA assesses the potential environmental impacts and cumulative impacts, possible ways to minimize effects associated with funding the proposed project, and discusses alternatives to DOE actions. The DOE will use this EA to support its decision-making with regard to the financial assistance agreement with BCI Louisiana L.L.C., a wholly owned subsidiary of BC International Corporation (BCI), the project applicant. Based on the analysis in the EA, DOE has determined that the proposed action is not a major Federal action significantly affecting the quality of the human or physical environment, within the meaning of the National Environmental Policy Act (NEPA) of 1969. Therefore, the preparation of an environmental impact statement is not required and DOE is issuing this Finding of No Significant Impact (FONSI).

COPIES OF THE EA ARE AVAILABLE FROM:

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BACKGROUND: BCI is proposing to refurbish, retrofit and operate a 20 million-gallon per year biomass waste (dry pulp wastes from the sugarcane industry) to ethanol production facility. The proposed project site is located approximately 4.5 miles southeast of Jennings, and approximately 1 mile west of Mermentau, in Jefferson Davis Parish, Louisiana. The project site was formerly operated as an oil refinery and was subsequently converted to

produce ethanol from molasses and cereal grains. The project site has been inactive since December 1990. BCI proposes to utilize existing and new facilities, machinery, and equipment during operation of the facility. One of DOE's missions is to develop alternatives to current fossil fuel energy sources. DOE would like to demonstrate that biomass wastes are a viable source for the production of ethanol. The proposed action would demonstrate, at a commercial scale, a process to produce ethanol from biomass wastes. DOE would provide technical assistance and partial funding to demonstrate this new technology. The proposed action would generate useful information on the performance of a commercial scale waste biomass to ethanol plant. The DOE will use the information contained in the EA as the basis for its decision on whether to provide financial assistance to BCI for the development of the facility.

PROPOSED ACTION: The proposed action consists of DOE providing financial assistance for a portion of the construction and operation of a 20 million-gallon per year biomass to ethanol production facility. The proposed action would demonstrate, at a commercial scale, the viability of using a proprietary hydrolysis technology and recombinant bacterium to produce ethanol from biomass. The proposed project would be typical of a conventional ethanol production facility with an advantage of being able to utilize and/or retrofit much of the existing on-site equipment and facilities from the former operations. DOE's role in the proposed action would be limited to providing funding assistance for a portion of the construction and demonstration of a new technology. Although DOE would review project activities, DOE would have no responsibility for construction supervision or facility operations. Further, DOE would have no responsibility for the day-to-day management of the facility once it becomes operational.

ENVIRONMENTAL IMPACTS: The EA for the proposed demonstration project assessed environmental impacts on air quality, water resources and water quality, noise, transportation, and impacts to human health and risk of upset conditions. No impacts to air quality in the region are expected because the pollutant emissions released from the proposed action would not exceed applicable state or federal emission thresholds. Moreover, the proposed project would include air emission control technologies along with Best Available Control Technologies to control air pollutant emissions. Water resource requirements for the proposed action would be met from existing on-site sources and would not constitute a significant increase in demand. No significant impacts to water quality would occur as a result of the proposed action. Wastewater discharge and stormwater runoff are expected to occur pursuant to the conditions and treatment levels required by existing state and federal permits currently in place for the facility. All physical and chemical discharge parameters would be within existing permit levels. Noise resulting from construction and operation of the proposed action would not be discernable to offsite receptors. Moreover, noise associated with the transport of materials and products to and from the facility would not be expected to increase sound levels.

Based on the relatively small increase in vehicles associated with the proposed action, traffic flow resulting from operational activities would not be expected to adversely affect current traffic conditions for any of the communities along project transportation routes. No significant impacts to vessel traffic are anticipated as a result of the proposed action. No navigational problems should occur as a result of an increase in vessel activity generated as part of the project. Potential impacts to public health and safety associated with the proposed action were assessed from the use of a novel strain of recombinant bacterium that would be used to ferment the biomass to ethanol, and the handling of chemical and petroleum materials. Based on the nature of the bacterium, no biohazards or safety concerns related to the possible exposure of the bacterium would occur. Accidental releases from handling operations-related material

were determined to have no adverse effects to human health or the surrounding environment based on the implementation of project design features, compliance with the operation/maintenance programs and adherence with specific regulatory requirements.

ALTERNATIVES CONSIDERED:

NO ACTION: Under the no action alternative, DOE would not fund the proposed biomass-to-ethanol project. As a result of implementing the no action alternative, the opportunity to demonstrate a superior ethanol production technology and proving the commercial viability of this technology would not be demonstrated at the project site.

RESPONSE TO COMMENTS: DOE received two comments to the draft EA. Copies of the comments are included at Appendix E of the EA. Copies of the DOE's responses are included at Appendix F of the EA.

DETERMINATION: Based on the information in the EA, DOE determines that the proposed action does not constitute a major Federal Action significantly affecting the quality of the human or physical environment, within the meaning of the NEPA. Therefore, the preparation of an environmental impact statement is not required, and DOE is issuing this FONSI.

Issued in Golden, Colorado,

August 27, 1999

Frank M. Stewart, Manager

U.S. Department of Energy

Golden Field Office

ENVIRONMENTAL ASSESSMENT

BIOMASS TO ETHANOL DEMONSTRATION PROJECT

BC INTERNATIONAL CORPORATION'S ETHANOL FACILITY IN JEFFERSON DAVIS PARISH, LOUISIANA

U.S. DEPARTMENT OF ENERGY
GOLDEN FIELD OFFICE

DOE/EA-1265

August 27, 1999

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ACRONYM/ABBREVIATION LIST

°F	Degrees Fahrenheit
AAQS	Ambient Air Quality Standards
BACT	Best Available Control Technology
Bbl	Barrels
CAA	Clean Air Act
CEMS	Continuous Emission Monitoring Systems
CO	Carbon monoxide
DDGS	Distillers dried grains and solubles
DOTD	Department of Transportation and Development
EA	Environmental Assessment
EPA	U.S. Environmental Protection Agency
Gal	gallons
Gpd	gallons per day
Gph	gallons per hour
HAP	Hazardous air pollutant
Hr	Hour
LA	Louisiana
LDEQ	Louisiana Department of Environmental Quality
LESHAPS	Louisiana Emission Standards for Hazardous Air Pollutants
MACT	Maximum Achievable Control Technology
MEOH	Methanol
MmBTU	million metric British Thermal Units
NAAQS	National Ambient Air Quality Standards
NO	Nitric oxide
NO_2	Nitrogen dioxide
NOAA-CIRES	National Oceanic and Atmospheric Administration – Cooperative Institute for Research in Environmental Sciences
Nox	Nitrogen oxide
NPDES	National Pollution Discharge Elimination System
PM_{10}	Particulate matter less than 10 microns
PSD	Prevention of Significant Deterioration
ROC	Reactive organic compound
SO_2	Sulfur dioxide
SO_4	Sulfate
TOC	Total organic carbon
Tph	tons per hour
TPY	tons per year
VOC	Volatile organic compound

1.0 INTRODUCTION

BCI Louisiana L.L.C., a wholly owned subsidiary of BC International Corporation (hereinafter referred to as "BCI") proposes to refurbish, retrofit, and operate a 20 million-gallon per year biomass to ethanol production facility in Jefferson Davis Parish, Louisiana. BCI proposes to utilize existing and new facilities, machinery, and equipment during operation of the facility. This Environmental Assessment (EA) evaluates the potential environmental impacts and cumulative impacts of the proposed project and possible ways to minimize those effects. The U.S. Department of Energy (DOE) will use the information contained in this document as the basis for its decision on whether to provide financial assistance to BCI for the construction and development of an ethanol commercial demonstration project that uses additional biomass waste (dry pulp waste from sugarcane industry). Because this document will support the DOE decision to fund or not to fund the proposed BCI construction and development project, conditional verbs such as "would" are used throughout this document.

1.1 NATIONAL ENVIRONMENTAL POLICY ACT AND RELATED PROCEDURES

This EA has been prepared in conformance with applicable laws and regulations. Specifically, the EA conforms to the requirements of the National Environmental Policy Act (NEPA) (42 U.S.C. § 4321, *et seq.*); the Council on Environmental Quality (CEQ) regulations for implementing the procedural provisions of NEPA (40 CFR Part 1500; and the DOE's implementing procedures for NEPA (10 CFR Part 1021).

A visit to the proposed facility was conducted to assess site conditions, record existing environmental conditions, meet with state and local agency representatives, and assist in scoping this EA. Federal, state and other stakeholder organizations were sent a scoping letter regarding the proposed action to assist DOE in identifying issues. DOE received no relevant responses to the scoping letter. Appendix A contains a copy of the scoping letter and a list of recipients.

1.2 PURPOSE AND NEED

One of DOE's missions is to develop alternatives to current fossil fuel energy sources. DOE would like to demonstrate that biomass wastes are a viable source for the production of ethanol. Currently, biomass wastes are not seen as a resource, but rather as a liability because of rising waste disposal costs. The proposed action would demonstrate at a commercial scale a process to produce ethanol from biomass wastes. DOE would provide technical assistance and partial funding to demonstrate this new technology. The proposed action would generate useful information on the performance of a commercial scale waste biomass to ethanol plant.

2.0 PROJECT DESCRIPTION

2.1 PROJECT LOCATION

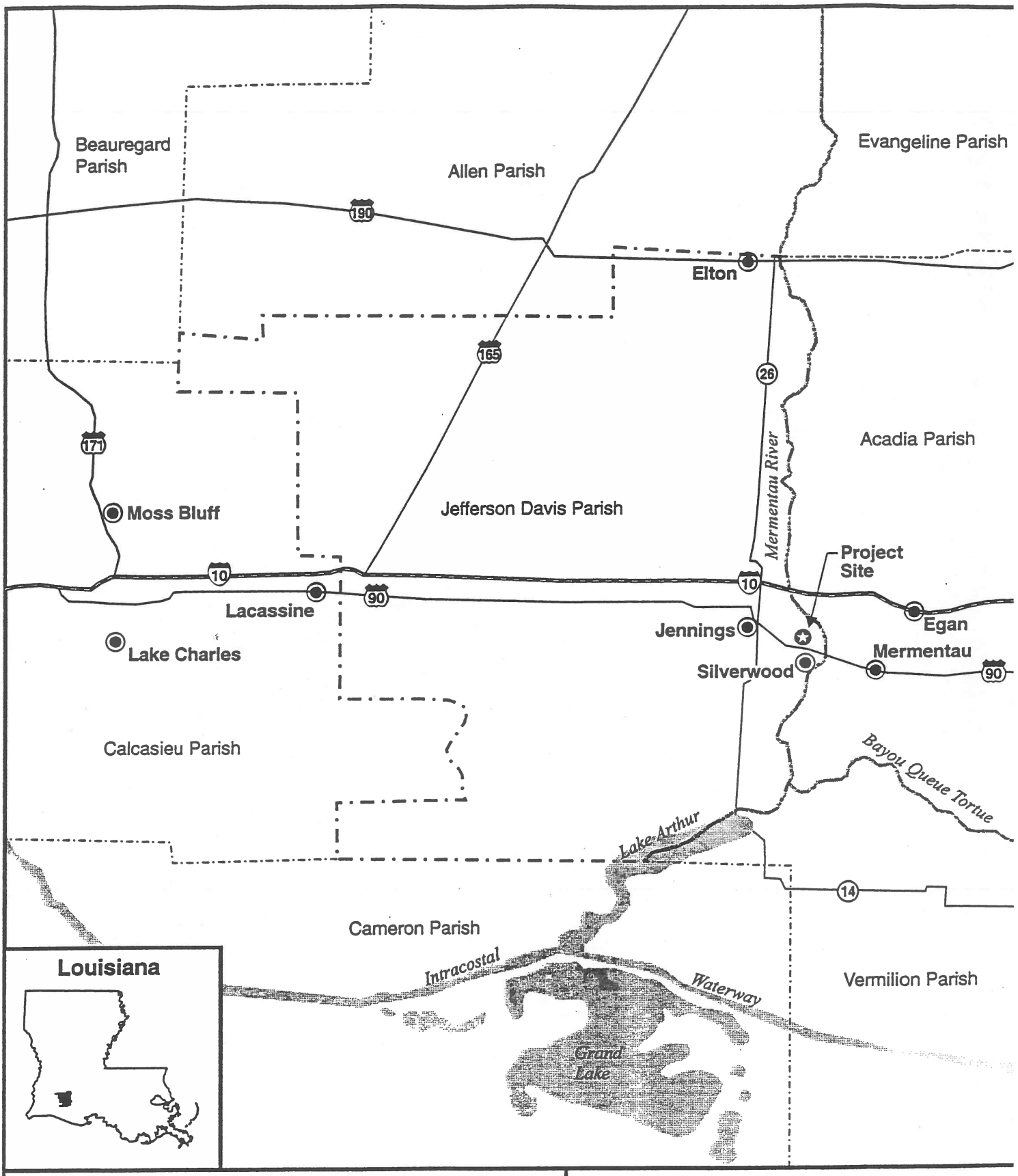
The proposed project site is located approximately 4.5 miles southeast of Jennings, Louisiana, and approximately 1 mile west of Mermentau, Louisiana. The project site, formerly known as the Shepherd Oil facility, is located at the end of Campbell Wells Road, on the north side of U.S. Highway 90 (U.S. 90) in Jefferson Davis Parish, Louisiana. The Mermentau River is the boundary between Jefferson Davis Parish and the Acadia Parish. Figure 1-1 is a map showing the regional location of the project site. The project site consists of approximately 110 acres of land. The land use around the project site is primarily industrial. There are two businesses, Campbell Wells and Triangle Shell, within a 0.25-mile radius of the project site. These businesses are located on the north side Campbell Wells Road. The project site is bounded on the north and east by the Mermentau River and the Nezpique Bayou; on the south by industrial land uses and U.S. 90; and on the west by industrial land uses and open space.

2.2 FORMER OPERATIONS

The project site was formerly operated by Shepherd Oil, Incorporated as an oil refinery from December 1977 through May 1981. In 1981 the refinery was converted to produce ethanol from molasses. By August 1984 the ethanol facility was producing approximately 36 million gallons annually of ethanol alcohol from molasses. The facility was modified in 1986 so that cereal grain could be used. Ethanol production ceased in December 1987. Following Shepherd Oil's bankruptcy petition under Chapter 11 (reorganization), the facility was placed under the protection of a bankruptcy trustee. BioCom USA Limited purchased the facility in 1988. The facility was recommissioned in May 1989 and, on August 8, 1989, the facility restarted operations as an ethanol production facility. In December 1990, the plant ceased operations and BioCom subsequently liquidated assets in a Chapter 7 bankruptcy proceeding. The bankruptcy Trustee for Shepherd Oil reobtained the facility as result of BioCom's Chapter 7 liquidation. In December 1994, BCI purchased the facility. The facility has been inactive since December 1990.

2.3 OVERVIEW OF THE ETHANOL PROCESS

The on-site equipment and facilities would be typical of a conventional ethanol production facility, consisting generally of feed stock storage areas, fermenters, distillation facilities, boilers, wastewater treatment facilities, and associated auxiliary equipment. While conventional practices and equipment would be used, novel processes would also be demonstrated including a proprietary hydrolysis technology and the use of a patented bacterium to produce a high ethanol yield. The proposed project would be able to utilize and/or retrofit much of the existing on-site equipment and facilities from the former ethanol production operations. These major components along with a generalized overview of the ethanol production process are described below. Figure 1-2 shows a plot plan of the proposed facility indicating existing and proposed facilities at the site.



Department of Energy
BCI Bagasse to Ethanol Demonstration Project

Regional Map

JOB NO. 30822-116-103	DCM GROUP Dames & Moore		DATE 1/99
FILE NAME BCI-1.cdr			FIGURE NO. 1-1
DESIGN/ DRAFT DJL			

Step 1: Biomass Handling - The main material expected to be used, called bagasse, is the dry pulp remaining after the juice has been extracted from sugar cane stalks. The bagasse would be received from area sugar mills. On-site storage areas would be designed for a 15 to 45-day supply of bagasse. The bagasse storage area would be expected to require a 12-acre area either on-site or adjacent to the existing facility depending on available space. In either case, the storage area would be equipped with a subsurface leachate collection system in conjunction with a naturally occurring clay strata liner. The leachate (percolating water) would be transferred to the existing wastewater collection area for treatment and ultimate discharge. Based on the relatively short storage period and the ability of the compacted bagasse to shed water, the storage area would not be enclosed. While on-site storage will be planned for, the expectation is that the bagasse will be transported to the ethanol facility and feed directly into the facility hoppers without having to be stored.

Step 2: Hydrolysis - Once bagasse has entered the system, it would be transferred via belt conveyors and augers to the hydrolysis section of the facility, where a two-stage dilute sulfuric acid processing would convert the bagasse into fermentable sugars. The bagasse would be mixed, weighed, and fed into a reaction vessel with water and acid to separate it into two components – hemicellulose sugars and lignocellulose. This pretreatment or hydrolysis process is needed to separate the hemicellulose fiber (now in soluble sugar form) from the lignocellulose (remaining solid material). The hemicellulose-derived sugar solution (five-carbon sugars such as xylose, arabinose and galactose) would be prepared for fermentation stage by removing any fermentation inhibitors created by the hydrolysis. The lignocellulose would go through a similar second dilute acid hydrolysis to convert the cellulose into a sugar solution. This process would convert the cellulose fiber into six-carbon sugars. The six-carbon sugar stream with lignin would then be pumped through a neutralization process in order to prepare the materials for fermentation.

Step 3: Fermentation - The hemicellulose and lignocellulose sugar solutions, once neutralized, would be pumped separately into four fermenters each. The hemicellulose solution (i.e., the five-carbon sugar stream) would be inoculated with a recombinant bacterium (see 4.5.1 of this EA for more detail) and nutrients to initiate fermentation. The duration of the fermentation is approximately 48 to 72 hours and would produce a 4 to 6% by weight ethanol beer. The lignocellulose solution (i.e., the six-carbon sugar stream) would be inoculated with yeast and nutrients to initiate fermentation. The duration of this fermentation is approximately 48 hours and would produce 6.5 to 8% ethanol by weight. Once fermentation is complete each stream would be pumped to a separate beer well.

Step 4: Distillation – The fermented beer from the five-carbon sugars would be pumped to a beer stripper in order to separate the solids from the liquids (ethanol and water). Separately, the fermented beer from the six-carbon sugars would also be pumped to a beer-stripping column to separate the lignin solids from the liquids. The resulting liquid stream from each beer column would then be combined and distilled to produce an ethanol product containing very little water (i.e., a hydrous product). The ethanol would then be redistilled and concentrated to produce fuel grade or industrial grade ethanol with no water (i.e., an anhydrous product).

Step 5: Waste Water Treatment – The nonfermentable solids from the hemicellulose sugars (residue mostly consisting of gypsum from the neutralization step) and the water from the process will be discharged from the base of the beer stills and pumped to a holding tank. The material will be processed to remove the gypsum, and the sent through an anaerobic digester. The methane gas from the digester will be compressed and used as auxiliary fuel to boilers. The effluent from the digester will then be pumped to the existing wastewater treatment plant and treated to meet existing permit standards.

Fuel Boilers – Three new biomass boilers would be installed with the goal of making the facility energy self-sufficient. The boilers would use the lignin from the six-carbon beer still (the residue solids from the feedstock) created at the end of the hydrolysis process as boiler fuel. The lignin would be dried before being fed into the boilers in a lignin-drying unit using the exhaust from the boilers. Other biomass material may be used as boiler fuel if it is necessary. Additionally, there will be two natural gas fired turbines with trim burners to supplement power generation. The hot turbine exhaust would also be used in the lignin-drying unit to prepare the biomass fuel for the boilers. Plant processes, primarily the distillation system, would use the steam generated by the biomass boilers. Residual ash from the biomass boilers would be removed and properly disposed of off-site.

Air Emission Reduction Systems - The boilers and turbines represent potentially significant sources of air emissions. In addition, the lignin-drying unit would be a potential source of particulate matter emissions. These five combustion sources and the lignin-drying unit will include air emission control technologies. In accordance with state and federal emission regulations, Best Available Control Technology (BACT) will be used. The biomass boilers will use a combination of combustion control and flue gas recirculation technologies to lower the emission rate of Nitrogen Oxides (NOx) to 0.25 pounds per million BTU (British thermal units). The proposed turbine will include steam injection technology for NOx control. Emissions of particulate matter from the lignin dryer exhaust stack will be controlled by a baghouse designed to achieve a controlled emission rate of 0.005 grains of dust per dry standard cubic foot.

2.4 EQUIPMENT, CONSTRUCTION, AND OPERATIONS

2.4.1 Equipment and Construction

The project site was previously used for ethanol production. As a result, a majority of the existing facilities would be able to be reused without the need for significant modification. In other cases, the equipment would be able to be reused after being retrofitted. The equipment which would be reused includes: truck and barge loading/unloading stations, the yeast process building, cooling towers, the aeration basin, potable water and wastewater treatment facilities, electrical and piping infrastructure, and the majority of the storage tanks (e.g., fermenters, beer holding tanks, beer well). See Figure 1-2. In addition to the retrofitting and modifications to the existing equipment, the facility will be cleaned up and restored to operating condition (e.g., idle equipment inspected; bearings and seals replaced; and electrical equipment inspected and replaced as needed). New equipment needed to operate the proposed project would include bagasse loading/unloading (for both truck and barge) and storage facilities, pretreatment facilities,

hydrolyzers, three biomass boilers, two natural gas-fired turbines, distillation system, and additional storage tank). In order to reconfigure the facility and make the necessary improvements, construction would also require removal or discontinuance of some existing equipment. See Figure 1-2.

2.4.2 General Operational Information

Personnel - In order to operate the facility, BCI would deploy a permanent onsite workforce of 63 employees. Employment projections would require approximately 48 personnel for operations and require approximately 15 people for management, for a total of approximately 63 workers. The proposed facility would operate 24 hours a day (with three shifts), seven days per week.

Bagasse Transfer - The plant benefits from its proximity to substantial feedstock sources. Bagasse would be collected from various local sugar mills and transported to the site by trailer truck or by river barge (refer to the Transportation section of this EA for details). The amount of bagasse used during operations depends upon the operating conditions of the facility. The storage areas would be designed for a 15 to 45 day supply of bagasse. Based on current ethanol output projections, the consumption of bagasse would be approximately 1,800 tons (wet) per day or 634,000 tons per year.

Chemical Storage and Use - Various chemicals would be stored and used to meet the operational requirements of the ethanol facility. Appendix A-5 provides a listing of the chemicals and substances that would be stored onsite. All storage tanks would be aboveground, with appropriate spill control features.

Solid and Liquid Wastes - Solid wastes generated during routine operations and maintenance include used inlet air filters from the various equipment, used lube filters, daily trash, and dirty/oily rags. Solid waste would be collected at designated accumulation sites and disposed of in accordance with applicable laws and regulations. As described earlier, the residual lignin residue material produced during the process would be used as a boiler fuel that would eliminate the need to dispose of it at a disposal site. Liquid waste would be predominantly operational process water discharge and sanitary waste. Other wastes may include solvents, spent oils, and periodic boiler cleaning. Liquid waste would be collected and stored onsite, recycled if possible and the remainder transported and disposed of in accordance with all applicable laws and regulations. Gypsum, produced from the neutralization of the sulfuric acid used in hydrolysis, would be disposed at appropriate disposal sites or recycled if possible.

Ethanol Shipment - BCI proposes to produce approximately 20 million gallons per year of ethanol. Prior to shipment of the ethanol, a denaturant would be blended with the ethanol and would then be transported from the onsite storage tanks to railcar tankers via a series of pipelines. Current estimates of railcar movements depend upon the operating conditions, however, typical daily railcar tanker movements are estimated to be about 10 (5 inbound; 5 outbound).

Project Schedule - Approximately 24 months have been scheduled for project demonstration.

2.5 NO ACTION ALTERNATIVE AND OTHER ALTERNATIVES CONSIDERED

2.5.1. No Action

Without funding from DOE for the proposed project (i.e., funds to retrofit, construct, and develop the ethanol facility) it is likely that BCI would not continue the development of the proposed project. Thus, the existing facility would likely remain inactive for the near future. The objective and opportunity to demonstrate a superior ethanol production technology with greater conversion efficiencies using the recombinant bacterium and other related processes would not be explored and the commercial viability of the proposed project's ethanol production would not be demonstrated.

2.5.2 Other Alternatives Considered

The alternative of BCI locating the proposed project at a new location was considered. However, constructing a new ethanol production facility at another location would be prohibitively expensive. The proposed project would be a first of its kind, the initial costs would be high. There would be considerable costs associated with scaling up a new facility. Using an existing facility reduces construction and equipment costs and helps make the proposed project more financially viable. Therefore, BCI locating the proposed project at a new location as a new facility would not be a judicious use of limited financial assistance funds and was dismissed from further analysis under this EA.

3.0 AFFECTED ENVIRONMENT

3.1 AIR QUALITY

This section summarizes the existing air quality setting for the proposed project area. The existing climate and meteorology of the proposed project area is summarized in the Appendices.

Louisiana has a humid, subtropical climate characterized by abundant rainfall spread through the year and by warm summers and mild winters. The mean temperature for the entire state is 67.4° Fahrenheit (F) (Hansen, 1971). The mean temperature for southern Louisiana, where prevailing southerly winds and a network of bays, bayous, and lakes are moderating influences, is 53.2°F in January, the coldest month, and 82°F in July and August, the warmest months.

3.1.1 Ambient Air Quality Standards

The air shed around the project currently meets applicable federal Ambient Air Quality Standards for all criteria pollutants (i.e., the area is in attainment with the applicable Clean Air Act (CAA) implementation plan). Ambient Air Quality Standards (AAQS) have been established by the U.S. Environmental Protection Agency (EPA) and the Louisiana Department of Environmental Quality (LDEQ) for specific levels of air quality which, when exceeded, may cause adverse human health effects. Air quality is generally considered acceptable if pollutant levels are less than or equal to the AAQS on a continuous basis. The State of Louisiana refers to the federal AAQS but also has specific state AAQS.

3.1.2 Air Quality Regulations

3.1.2.1 Federal Regulations

The EPA promulgated the National Ambient Air Quality Standards (NAAQS) under the provisions of the CAA. The most relevant CAA Titles to the proposed project are discussed below.

Title I deals with attainment and maintenance of the NAAQS. It defines various levels of attainment for each type of criteria pollutant and requires levels of control technology depending on the severity of non-attainment. Implementation of Title I is delegated to the LDEQ. The Title I General Conformity rule states that a federal action should not adversely affect the efforts to attain or maintain the NAAQS in the region of the federal action. The General Conformity rule only applies to nonattainment areas. Thus, it does not apply to the proposed action.

Title III deals with hazardous air pollutants and is implemented by LDEQ. Pursuant to Title III, regulations have been promulgated establishing Maximum Achievable Control Technology (MACT)

- LAC 33:III (Chapter 17), Control of Emissions of Carbon Monoxide (New Sources): restricts degradation of existing quality.

- LAC 33:III (Chapter 21), Control of Emission of Organic Compounds: sets regulations for storage, monitoring, reporting, and record keeping procedures for organic compounds.

The permit thresholds for all attainment areas are listed in Table 3-1.

Table 3-1. Federal Permit Thresholds

Pollutant	Federal Permit Thresholds (tons per year)
Volatile organic compounds (VOCs)	100
Carbon monoxide (CO)	100
Nitrogen oxides (NO_x)	100
Sulfur dioxide (SO_2)	100
Small particulates (PM_{10})	100
Particulate matter	100
Combined hazardous air pollutants (HAPs)	25
One HAP	10
Lead	10

Source: LDEQ, 1997

3.1.3 Significance Criteria

Criteria for determining the significance of air quality impacts are related to the potential for the proposed project to adversely affect air quality within the vicinity and region of the project location. There are several levels of analysis that may be used to evaluate the potential air quality impacts of a proposed project. The levels of analysis range from simply reviewing the size or ratings of equipment to performing detailed air dispersion modeling demonstrations and collecting ambient baseline air data.

The first level, which may be considered a preliminary screening level, is based on air permitting exemptions. If the proposed project does not involve significant air emitting equipment or is exempt from a federally approved state-permitting program, then the project may be considered insignificant in terms of air impacts. The state permit regulations indicate two types of sources that may be considered insignificant. The first is any source of criteria pollutant emissions that would emit less than 5 tons per year. These emission rate sources may receive exemptions granted by the LDEQ as per LAC 33:III Section 501(B)(4). The second type are specifically listed under LAC 33:III Section 501(B)(5) as an insignificant source based on the size, emission or production rate, or type of pollutant.

The next screening level of analysis considers whether the total potential emissions from the facility would exceed established Major Source emission thresholds (i.e., Title I regulatory programs like the PSD program and the New Source Review permitting program).

The Major Source emission thresholds applicable to this project are summarized below in Table 3-2. If a project is estimated to have a potential to emit less than these thresholds, it may be concluded that the project would not have a significant impact on air quality. If the project is estimated to exceed thresholds, a more detailed level of analysis is required.

Table 3-2. LDEQ Permitting and PSD Major Source Thresholds (tons per year)

Regulatory Program	NOx	VOC	SOx	CO	PM_{10}
LDEQ Permitting Major Source	100	100	100	100	100
PSD Major Source Thresholds	100	100	100	100	100
Lowest Threshold – Significance Criteria	100	100	100	100	100

Source: LDEQ, 1997

If the PSD Major Source emission thresholds for any pollutant would be exceeded, a PSD permit would be required. To obtain a PSD permit, a facility must demonstrate that the emissions would not cause a significant deterioration of air quality using a two level air dispersion modeling analysis. Other requirements in obtaining a PSD permit include implementation of the BACT.

In the preliminary level of a PSD air quality analysis, the potential impacts of the air emissions from the proposed source are estimated using EPA approved local meteorological data and dispersion model techniques. If the impact can be demonstrated to be less than established significance levels, no further analysis is required and the project may be concluded to have a less than significant air quality impact.

A full impact analysis is the next level of PSD evaluation if the significance levels are exceeded in the preliminary analysis. A PSD incremental analysis must be performed that uses air dispersion modeling of the proposed source emissions combined with emissions from other sources in the impacted area. The resulting combined estimated impact may not exceed established increments of air quality degradation and the combined impact must not exceed the NAAQS when added to the measured ambient air quality determined by monitoring.

3.2 WATER RESOURCES AND WATER QUALITY

3.2.1 Water Supply

The project area lies above the Chico Aquifer. This aquifer is a major source of water in southwestern Louisiana serving as source of water for drinking (potable), farming (irrigation), and industry (process and/or cooling) (LDEQ, 1994). The facility receives potable water and process water from seven on-site water wells. The facility would maintain two wells ranging between 155 feet and 168 feet deep for potable water needs. The other five wells are listed for industrial supply and have depths of 200 (one well), 240

(two wells), and 595 (two wells) feet. During prior operations, the process water requirements during operations were approximately 2-million gallons of water per day. No water well permits or limits are imposed; however, the wells would be registered with the state of Louisiana.

3.2.2 Wastewater

Process wastewater would be treated at onsite wastewater treatment plant and then discharged at a permitted outfall (discharge point #001) to the Mermentau River. The outfall would be permitted under the National Pollution Discharge Elimination System (NPDES) permit (No. LA0051799 WP 0506). The facility's permit would establish limits on temperature, type and amount of effluent discharged, and total gallons released to preserve the integrity of the receiving water. The proposed project would use a water intake system from the Mermentau River for the waste treatment system. The wastewater discharge volume of the prior ethanol operations was estimated at approximately 1.4 million gallons per day. The former operations also employed a water intake system from the Mermentau River for emergency fire use.

3.2.3 Stormwater Runoff

The facility would also be permitted for stormwater runoff. The facility currently has four different stormwater outfalls (discharge points #002, 003, 004 and 005) which terminate at the Mermantau River. The permit would require the stormwater be analyzed for total organic carbon (TOC), oil and grease, and pH (pH is a measure of the acidity and alkalinity of a liquid). The area adjacent to the eastern boundary of the site is considered to be within the Mermentau River floodplain. All other project facilities would be outside of the floodplain contour with the exception of the mooring facilities, which are adjacent to the Mermentau River.

3.3 NOISE

The primary land use in the area is industrial with no noted significant or unusual noise generators. The closest human noise receptor is approximately 2,000 feet (0.4 miles) away in the community of Silverwood almost directly south of the facility on the south side of U.S. Route 90. The town of Mermentau is approximately 1 mile to the southeast. While the land uses surrounding the project facility are primarily industrial, much of the surrounding land is undeveloped and relatively flat, with significant amounts of vegetation. There are no known state or parish noise ordinances applicable to the project area. The city of Jennings does have a noise "nuisance" ordinance, however, the ordinance does not identify specific unacceptable noise or sound levels. During past operations of the facility there were no known noise-related complaints.

3.4 TRANSPORTATION

The project's primary transportation corridor for facility-related vehicle deliveries and shipments would be Interstate 10 (I-10) to State Highway 1111 (S.H. 1111). The vehicles would travel south on S.H. 1111 to

westbound U.S. Highway 90 (U.S. 90) through the towns of Tortue, Estherwood, Midland, and Mermentau. After crossing the Mermentau River on U.S. 90, the vehicles would travel north on Campbell Wells Road. The project site is located at the end of Campbell Wells Road.

Average Daily Traffic (ADT), defined as the total number of cars over a segment of roadway in both directions in a typical day have been recorded throughout Louisiana by the Louisiana Department of Transportation (LDOT). ADT counts provided by LDOT's District 3 for the Acadia Parish show that on U.S. 90, just east of Mermentau, the daily traffic count has decreased from 3,020 vehicles in 1990 to 940 vehicles in 1996. Similarly, just east of Estherwood on U.S. 90 the daily count has decreased from 3,930 vehicles in 1990 to 3,360 vehicles in 1996. The area of greatest congestion along this route occurs in Crowley. Here the annual ADT counts have increased slightly overall since 1990. The most recent ADT counts at four stations along U.S. 90 in Crowley are 5,690 measured in 1994 for station #235401, 12,980 for station #235271 and 2,210 for station #235291 in 1995, and 11,700 for station #23581 in 1996.

An additional route would entail vehicles exiting I-10 onto State Highway 91 (S.H. 91). Vehicles would travel south on S.H. 91 until exiting onto U.S. 90. The ADT on S.H. 91 decreased from 2,350 vehicles in 1992 to the most recent measurement of 1,900 vehicles in 1995. Vehicles could also travel to the project facility from the west traveling on I-10 before turning south on S.H. 26. The ADT counts in Jefferson Davis Parish for 1994 show the stations with the highest counts along S.H. 26 and S.H. 102 with vehicle counts of 12,500 and 8,450, respectively.

Traffic flows on these roads are periodically monitored to determine the roads' Level of Service (LOS). The LOS is a qualitative measure that refers to the different operating conditions that occur in a roadway or lane when accommodating various traffic volumes. It includes traffic flow factors such as special travel time, interruptions, freedom to maneuver, driver comfort, and convenience. LOS is described by a letter rating system from A to F, with LOS A indicating stable flow and little or no delays, and LOS F indicating jammed conditions and excessive delays. Roadways that would be affected by the proposed project currently operate at or above acceptable service levels even during morning and afternoon peak-hour traffic periods.

Vessel and barge traffic during former operations was about 50 vessels per year. The proposed project is expected to require a similar number of barges. Grains, molasses, other feed materials, and operational material were loaded and offloaded for the former operations at the berth east of the project facility on the Mermentau River. The segment of river adjacent to the project site is not considered busy by the U.S. Coast Guard since the existing level of vessel traffic averages less than 100 movements per year.

Rail carriers in the areas of the proposed project were contacted in an effort to assess existing rail traffic and potential impacts from an increase in rail movements as a result of the proposed project. The local carriers provided no data.

3.5 HUMAN HEALTH AND RISK OF UPSET

This section discusses the proposed project in terms of potential health and safety risks to the public and environment. A review of the facility's previous operations is presented to provide a baseline for a discussion of the federal reporting requirements, identification of potentially hazardous chemicals and materials, identification of potential accidental releases, and a discussion of mitigation measures and controls. A discussion of the *E.coli* bacteria (the recombinant bacterium also referred to as K011) responsible for ethanol production for the proposed project is also discussed as it relates to potential biohazards to workers or the environment in the event of an accidental release. At this time a quantitative analysis of the proposed project is not warranted. Therefore, this section qualitatively discusses the potential for risk of upset.

3.5.1 Setting

The proposed facility was formerly operated as an oil refinery from late 1977 through mid 1981. Modifications were made to convert the facility to an ethanol plant, and it produced alcohol from mid 1984 to late 1987. In 1989 the plant was re-commissioned and restarted ethanol production. In December 1990 the plant ceased operations and the facility has been inactive since this time. Since the project area is industrialized, there are no sensitive receptors such as schools, hospitals, or residential areas located in close proximity of the facility. The facility is approximately 2,000 feet from the nearest residential areas in the community of Silverwood.

3.5.2 Applicable Laws, Regulations and Permits

A review of applicable federal, state, and local laws and regulations for the handling of hazardous materials was conducted. Based on the findings, submission of EPA Form R, the Toxic Chemical Release Inventory Reporting Form, is required by Section 313 of the Federal Emergency Planning and Community Right-to-Know Act (Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986). The Form R must be submitted annually on July 1st. A separate Form R would also be needed for releases or spills (in to or on to the air, water, land, and also for final disposal) above the threshold quantities of SARA 313 listed toxic chemicals.

Section 304 of SARA requires businesses to immediately notify the local emergency planning committee and the state emergency response commission if there is a release of a hazardous substance that exceeds the reportable quantity. Under Section 311 of SARA, a business must submit Material Safety Data Sheets (MSDS) or a list of the chemicals for which a facility is required to have a MSDS to the local emergency planning committee. The threshold quantities triggering reporting under Section 311 are 10,000 pounds for hazardous chemicals or 500 pounds for extremely hazardous chemicals. A revised MSDS or list must be submitted when there is a significant change in quantity or type of chemical. Each facility that is required to have MSDS must also submit additional information annually, on March 1st, as required by Section 312 of SARA.

According to the LDEQ - Office of Solid and Hazardous Waste Services, the facility operator could be required to complete a contingency plan and associated emergency procedures for operations at the facility. The objective of the plan is to design the plan to minimize hazards to human health or the environment from fires, explosions, or any unplanned release of hazardous waste or constituents to air, soil, or surface water. The plan is required to describe how the facility operator would respond to upset conditions, arrangements with local fire and police protection, and identification of emergency coordinators and associated equipment. The Office of Solid and Hazardous Waste Services also maintains EPA Identification Numbers. A business is required to obtain an EPA number prior to the generation of hazardous waste. This provides the generator with a unique identification number that is required on all hazardous waste disposal manifests. The former operator maintained an EPA Identification Number (084965755). This EPA Identification Number is available for use by BCI, however, it has not yet been reassigned to BCI.

The LDEQ has developed regulations to prevent accidental releases of chemicals to the air and to minimize consequences of such releases. To meet this directive, LDEQ adopted the Chemical Accident Prevention Regulations (LAC 33:III.Chapter 59) in November 1996. The goals of the regulations are to focus on chemicals that pose a significant hazard to the community, prevent accidental releases, and minimize offsite consequences of such releases. This rule, which adopts the EPA regulation 40 CFR 68 by reference, requires all stationary sources with any of the listed regulated substance(s) above the threshold quantity to submit a Risk Management Plan by June 1999. The LDEQ noted that the project operator might be required to submit an application whereby the LDEQ would determine the necessary procedures and documentation.

A health and safety program was incorporated for the former operations and is currently being amended and modified by BCI for the proposed facility operations. Health and safety policies and programs for the facility are the result of incorporating procedures based on the former operations, industry experience, standards of the trade associations, and local, state, federal regulations such as the Occupational Safety and Health Act. BCI plans to amend the previous operator's Health and Safety manual. The new manual would include policies and procedures for: hazard communication standards (i.e. employee heath and safety hazard communication), protective clothing and equipment, electrical safety, loading/unloading of feed material, facility operations, fire prevention and protection, lab safety, first aid, and emergency preparedness. As a part of the Health and Safety manual, use of hearing protection gear is recommended while working inside high noise exposure areas. In addition, the program prescribes hardhats, safety shoes, safety glasses and other items such as protective gloves and uniforms. MSDS information, covering chemical and complex products in use at the facility, would also be available at the facility.

The facility would be required to register with the state by completing a Solid Waste Notification form and a Solid Waste Industrial Generator supplemental form. The Solid Waste Notification form is intended to track the generation of solid waste and the location of disposal. The Solid Waste Industrial Generator supplemental form is used to identify the specific type of industrial waste via a code by sampling and analyzing the waste.

Security for the project facilities would be maintained 24 hours a day. The main gate to the entrance to the facility is staffed with security personnel that maintain a physical presence at the main gate. The security personnel also have access to a telecommunication system. Visitors are required to stop and identify themselves to the security personnel at the main gate before entrance is granted. Master flow and drain valves are closed when the system is not in operation or is in "stand-by" status. The starter controls on all facility pumps are located at places accessible only to authorized operating personnel. Facility lighting is provided for safer operation and to reduce acts of vandalism.

The EPA has required that the proposed operations submit a Pre-manufacturing Notice for the use of the *E. Coli* bacterium strain proposed for use during demonstration and operations of the project.

3.6 ENVIRONMENTAL RESOURCES NOT AFFECTED

The proposal by BCI is to refurbish and recycle an idle ethanol facility that is sited in an existing industrialized area. The area surrounding the facility has been industrialized since at least 1976 when the original facility (i.e., Shepherd Oil's refinery) was constructed. The idle ethanol facility is an "open air" plant (i.e., there is no enclosed operating building with walls *per se*) that covers approximately 50 acres of the total 110-acre industrialized parcel owned by BCI. BCI's refurbishment plans do call for the fabrication and installation of new equipment to the "open air" plant. Some of the new equipment BCI plans to install will require some minor excavation so that larger and/or additional concrete support pads/footings can be used. Any such excavation will be appurtenant to the existing facility. There are no current plans to expand the facility beyond the 50-acre footprint. According to BCI's current plans, the facility may acquire an additional 12-acre parcel of land adjacent to the plant site to be used for on-site storage of the bagasse. This small parcel is not currently being used for industrial purposes; however, it is fallow. The parcel is currently plowed, but is crop-free.

Biological or wildlife resources that may have been present at BCI's facility were extensively disturbed by previous industrial and/or agricultural use. Native vegetation has been removed from the 12-acre parcel. The industrialized 50-acre area has little vegetation other than grasses and shrubs. No threatened or endangered species are known to occupy or use the 50-acre industrialized area or the undeveloped areas of the plant site (including the 12-acre parcel). There are no known jurisdictional wetlands within the industrialized area or the undeveloped areas at the plant site (including the 12-acre parcel).

4.0 ENVIRONMENTAL IMPACTS

4.1 AIR QUALITY

A revised PSD permit application and an initial Title V application were submitted by BCI to the LDEQ Office of Air Quality on September 8, 1998. The impact assessment set forth in this EA refers to the PSD permit and the emissions rates and impact assessments used for this permit. The application presents a Prevention of Significant Deterioration Evaluation that summarizes PSD applicability, a determination of BACT, and the results of an ambient air quality analysis performed by BCI. The net project increases in emissions are provided below in Table 4-1.

Table 4-1. Prior Actual and Proposed Potential Emissions (Tons per Year)

	Prior Actual	Proposed	Change	PSD Threshold
Sulfur Dioxide, SO_2	2	76	74	100
Particulate Matter, PM	75	32	(43)	100
Nitrogen Oxides, NO_X	79	298	219	100
Volatile Organic Compounds, VOC	86	27	(59)	100
Carbon Monoxide, CO	60	280	220	100

Note: Values in parenthesis indicate a net emission reduction.

Source: BCI, 1998

The boilers and turbines represent potential sources of air emissions. As summarized in Table 4-1, the proposed project is estimated to exceed the 100-ton per year thresholds for Nitrogen Oxides (NO_X) and Carbon Monoxide (CO); therefore, additional analysis was necessary to evaluate the potential significance of facility emissions. The application presented a BACT analysis for controlling NO_X and CO from the three bagasse boilers. The analysis concludes that flue gas recirculation combined with good combustion practices would be the approved BACT for these emission sources. The BACT analysis concludes that steam injection shall also be the control technology applied to the gas turbines. The application further stated that the LDEQ would review these proposed control technologies to assure that the potential emissions of the two significant pollutants would be minimized.

The lignin waste dryer would also be a potential source of particulate matter emissions. Emissions of particulate matter from the lignin dryer exhaust stack will be controlled by a baghouse designed to achieve a controlled emission rate of 0.005 grains of dust per dry standard cubic foot.

The potential impact on ambient air quality was assessed using a preliminary PSD air quality analysis. An air dispersion modeling protocol was approved by the LDEQ and the results as presented in the analysis were as follows:

Table 4-2. Results of PSD Air Quality Analysis

Pollutant and Impact Averaging Period	Model Estimated Impact	Significance Threshold Levels
NO_X – maximum annual	0.92	1.0
CO – maximum one-hour	71	2000
CO – maximum eight-hour	32	500

Note: All concentrations in g/M^3

These modeling estimated concentrations demonstrate that that the potential impacts to ambient air quality from the proposed project would be less than applicable significant thresholds.

4.2 WATER RESOURCES AND WATER QUALITY

4.2.1 Water Supply

The proposed facility would require a relatively small amount of water during operations. The bagasse feedstock brings in sufficient water for the process thereby eliminating the need for municipal water sources or groundwater extraction for process requirements. The existing wells on-site would be used only for occasional makeup water or for personnel needs; a volume estimated to be approximately 50,000 gpd. In comparison, well water capacity (estimated to be approximately 700,000 gpd) would far exceed water requirements for the proposed operations. Potential impacts to water resources (on-site or off-site) are not expected based on the facility's adequate water supply, current water supply facilities, and expected water requirements.

4.2.2 Wastewater

The existing wastewater treatment plant at the facility would be utilized to receive all wastewater generated from the proposed facility. According to the wastewater projections, effluent flow to the waste treatment plant would consist of process water and sanitary wastewater at volumes similar to the former operations (approximately 1.4 million gpd and 3,000 gpd, respectively). All wastewater effluent except the cooling water blowdown would be first sent to the equalization basin, followed by aeration, clarification, and then sludge digestion. The wastewater would then be mixed with the cooling water blowdown to the meter box and then discharged to the Mermentau River. Discharge would occur pursuant to the conditions and treatment levels required by the existing LDEQ permit and the NPDES permit. Discharge monitoring would be required on Outfall #001 by the LDEQ permit which requires weekly sampling and analysis of flow, pH, biological oxygen demand, and total suspended solids; monthly sampling and analysis of total organic carbon (TOC) and oil and grease; and bi-annual sampling and analysis of fecal coliform bacteria. The proposed action is not expected to appreciably change the volume of liquid effluent in comparison to former operations or introduce harmful pollutants to the Mermentau River. This is based on the following: (a) the facility being able to pretreat the wastewater prior to discharge (b) the ability of the operator to obtain the required wastewater discharge permits, and (c) the associated limitations imposed by the permits.

4.2.3 Stormwater Runoff

Drainage patterns and rates from the proposed facility would not differ appreciably from the previous operations. The final collection and discharge systems would not be expected to change as part of the proposed facility. Based on the ability of the facility to treat and discharge their own stormwater runoff, there would be no impact on public treatment facilities from the project. Moreover, based on the discharge requirements and limitations of the state's permit and that of the NPDES, water quality impacts from stormwater runoff would not be expected.

4.3 NOISE

Construction and redevelopment of the project's facilities is expected to generate noise primarily from internal combustion engines used to power construction and other related equipment. Specific noise generation and characterization depends on the type of equipment used, the amount of equipment operating simultaneously, and the hours of operation. It is anticipated that typical construction equipment would be used and that the hours of operation would occur only during daytime hours. It is also assumed that the construction period would be a relatively short time period, approximately 18 months. Normally, construction activities would be carried out in stages, each of which has its own mix of equipment and noise characteristics. The worst-case mix of construction equipment proposed for use at the project site would consist of two front-end loaders, two backhoes, two portable air compressors, and two generators. Noisy construction activities typically range from about 88 to 91 dBA at 50 feet from the center of construction activities. More typical noise levels at a facility would be expected to range from 65 dBA to 89 dBA at 50 feet during construction. Based on these estimates, worst-case construction noise at the nearest sensitive receptors (e.g., people living in a residential areas located approximately 0.4 mile from the project site) would be about 35 dBA. This level would be less than expected background levels and would not be noticeable. Based on expected noise emissions from construction activities and the location of noise-sensitive receptors, it is not anticipated that excessive or unusual noise generation would result from the construction of the proposed facility. In addition, construction activities would add approximately 30 to 50 vehicles to the local streets. Noise from the level of construction-related traffic would not be noticeable.

No historical quantitative noise data are available for the existing facility. Therefore, an estimate of noise generated from prior operations was made to assess whether potentially unacceptable noise levels could occur at the nearest residential receptor. For purposes of this impact assessment, it was assumed that the only source for noise reduction would be the result of attenuation (loss of sound with distance). It was also assumed that the noise is uniform, nondirectional, and freely propagating. Therefore, a basic sound propagation equation was used.

Using the sound propagation equation and assuming that the maximum noise level at the nearest receptor is 50 dBA and that this receptor is approximately 2,000 feet from the facility, it is estimated that the noise level 3 feet from the source would have to be approximately 106 dBA. The noise level of 50 dBA was chosen because it is a conservative residential nighttime noise level. It is not expected that the noise levels at the facility would approach the excessive level of 106 dBA. Moreover, based on other noise studies,

typical noise levels for a conventional ethanol facility were estimated to be between 56 to 70 dBA, with an average noise level of approximately 59 dBA at approximately 1,000 feet. With regard to the proposed facility, major noise sources would be associated with loading/unloading feedstock material, pumps, motors and valves. The proposed facility will not have milling operations (the hammermill that was used in the former operations was a dominating noise source and would be removed as part of the proposed project). Consequently, the proposed project is not expected to significantly increase noise levels. Furthermore, buildings, roadways, vegetation, and other land uses would act as sound barriers to reduce the noise levels associated with the operations of the proposed project. It is also expected that much of the equipment for the proposed project would be enclosed and thus, provide additional acoustical benefits and noise reduction.

Facility operations are expected to take place 24 hours a day, 7 days a week, 330 days a year. Transportation requirements for such things as raw materials and end products are expected to result in approximately 36 trucks per day. It is anticipated that 48 persons would be required to operate the facility, however, the driving patterns of the employees would be distributed throughout the day. While traffic noise would be expected to increase, the additional traffic associated with the proposed operations would not significantly contribute to the level of noise generated at the facility.

4.4 TRANSPORTATION

The proposed facility's bagasse consumption would average approximately 634,000 tons per year. Assuming a bagasse delivery ratio of 150 tons by barge and 484 tons by truck, approximately 36 trucks per day (or 72 truck trips per day; 36 inbound and 36 outbound) would be used to transport bagasse to the facility. Approximately 11 trucks per day (or 22 truck trips; 11 inbound and 11 outbound) would be used to deliver other raw materials (sulfuric acid, lime, corn steep liquor, isopropanol, gasoline, ethyl acetate). All of the bagasse and approximately half of the raw material deliveries would be made from the east using the route and roadways described earlier. The other half of the raw materials would arrive from roadways west of the facility. BCI is expected to contract for the trucks used in delivering the bagasse. The truck traffic would be distributed over the course of the day to minimize traffic congestion and to maintain a steady delivery rate.

Table 4-3 summarizes the worst-case number of operations-related vehicles.

Table 4-3. Estimated Worst-Case Truck Traffic Scenario

Truck Delivery Type	Number of Trucks	Trips In	Trips Out	Total Daily Trips
Bagasse	36	36	36	72
Raw Materials	11	11	11	22
Total	47	47	47	94

Source: BCI, 1997

The increase in project-related traffic expected from the anticipated 94 truck trips traveling to and from the facility is not expected to adversely impact current traffic conditions for any of the communities along the facility's transportation routes (e.g., Crowley, Tortue, Estherwood, Midland, and Mermentau). The

project-generated traffic would represent a small percentage (e.g., 0.3% in Crowley and 4.3% just east of Mermentau) of the total ADT currently experienced on the existing roadways. Over a 12-hour period on any given workday (the expected period in which trucks would visit the site), there would be an estimated 3 to 4 trucks making deliveries at the facility. The estimated increased vehicle traffic during project operations would not be expected to pose a Level of Service (LOS) problem. Therefore, there would be no adverse effect on traffic flow as a result of facility operations.

The truck trips expected to affect roadways through Jennings are not expected to cause a significant level of congestion at any major intersection in Jennings. The relatively small amount of truck trips distributed over a 12-hour period via either S.H. 26 or S.H. 102 would not cause a change in the operating level of the city's roadways.

The proposed project would generate approximately 122 additional vessel visits per year. The existing vessel traffic would not be significantly affected by the facility during the construction phase (from the shipment of materials and equipment) or the operational phase. The facility would result in an increase in vessel traffic, adding to the existing shipping volumes and potential congestion on the river; however, the daily and weekly number of vessel traffic calling at the facility is not expected to increase significantly in the future in terms of overall vessel traffic. Therefore, no significant impacts to vessel traffic are anticipated as a result of the proposed project. No navigational problems should occur directly as a result of the new vessel activity.

During project operations, approximately 10 rail car tanker movements could be expected per day. As discussed earlier, rail movement data was not available. However, while traffic delays could occur from train movements at at-grade crossings (the point where roadways and rail tracks intersect), it would be expected to cause only brief delays since much of the rail transport would be conducted during off-peak hours. Moreover, by transporting the ethanol by rail, approximately 150 truck trips would not be needed. This would reduce potential impacts from trucks.

4.5 HUMAN HEALTH AND RISK OF UPSET

4.5.1 Biological Hazards

A literature and data search was conducted to review available information as it applies to the potential for an accidental human exposure to the strain of recombinant bacterium that would be used to ferment the hemicellulose to ethanol (*Escherichia Coli*; *E. coli*; or K011). There appears to be no biohazard or safety concerns as related to exposure to recombinant *E. coli* bacterium. (Kane 1993; Kuhnert *et al* 1997). There does not appear to be any potential safety concerns or biological hazards in the event of an accidental release of the *E. coli* bacterium. The research data indicates that survival of the bacterium is very unlikely and also that the parent *E. coli* strain is nonpathogenic. Moreover, as part of the proposed project permit requirements, an EPA-required Pre-manufacturing notice would be completed to further evaluate potential effects of the microorganism.

4.5.2 Accidental Releases

Given the limited access to the facility and the industrial nature of the site vicinity, the public is unlikely to come into contact with potential spills or discharges occurring in the vicinity of the project site. Workers could potentially become exposed to spilled products (chemical and petroleum) during operations. However, based on the history of the site and the nature of project activities, the frequency of an accidental release of products is judged to be infrequent, while the severity of the consequence to persons is judged to be slight. This is based on the requirement of the facility to have appropriate design features intended to prevent the spillage of small quantities into the water or soil. The operator would need to prepare operating plans (i.e. spill prevention and contingency plans) prior to operations which provide procedures intended to prevent and mitigate the effects of large spills to the water and soil. Moreover, Material Safety Data Sheets (MSDSs) would be provided to the operator by the manufacturer of the products. The MSDSs identify the hazards associated with the products, and provide guidance on use of protective equipment and safe work practices.

Potential health and safety impacts associated with the proposed activities at the facility involve transfer, handling, and storage of operations-related materials. The hazards presented by these materials, during an accidental release, include possible fire and explosion. To minimize the potential impacts of accidents to onsite resources and personnel and resources adjacent to the facility, the facility would be required to comply with applicable federal, state and local laws, regulations, and permits.

4.6 ENVIRONMENTAL JUSTICE

On February 11, 1994, President Clinton issued Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations". This Order focuses federal attention on the environmental and human health conditions of minority communities and low-income communities and calls on agencies to make achieving environmental justice part of their mission. President Clinton wanted federal agencies to reinvent the way they approach environmental justice so that day-to-day efforts will be more effective in protecting the public health and environment. The purpose of environmental justice is to ensure that no segment of the population, regardless of race, ethnicity, or income, bears disproportionately high and adverse effects of environmental pollution. No significant adverse environmental impacts would be expected with implementation of the proposed project. Consequently, the proposed project would not be expected to result in unfair or unequal treatment of any low income or impoverished communities or populations.

4.7 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The proposed action would refurbish a former ethanol production facility. The proposed project would reuse equipment and facilities currently at the site where possible. The proposed action would not lead to an irreversible and irretrievable commitment of resources. The overall goal of the project is to reduce the use of fossil fuels by producing ethanol from biomass wastes.

4.8 IMPACTS TO THE NO ACTION ALTERNATIVE

If DOE does not fund the proposed action, all potential impacts associated with the projects would likely be avoided since the project would not go forward. However, the opportunity to demonstrate a superior ethanol production technology would not be explored and the commercial viability would not be demonstrated.

5.0 CUMULATIVE IMPACTS

Cumulative impacts are defined as impacts on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. Future developments in the Jefferson Davis parish and City of Jennings area are expected to consist mainly of commercial development and some minor industrial developments. At the time of this assessment, there were no current or proposed actions in the area that, combined with the proposed project, would contribute to adverse cumulative environmental impacts to the Jennings area. The proposed project, as discussed above, is not expected to have an adverse effect on any aspect of the environment in the affected area of Louisiana.

5.1 AIR QUALITY

The proposed project would not violate LDEQ air quality significance criteria/standards for criteria air pollutants. While the proposed action would incrementally add air emissions to the local air shed, project operations would not significantly contribute to the degradation or deterioration of air resources. Based on the expected air emissions from the other known commercial and industrial development activities in the vicinity near the proposed facility, no adverse cumulative air quality impacts would be expected.

5.2 WATER RESOURCES AND WATER QUALITY

The capacity of the existing on-site wells servicing the facility would have ample capacity to support the proposed action. No new wells would be needed and no new demand would be placed on the municipal water supply. The process water required would be a small increase in what was formerly being used. No appreciable changes in filtration, chemical treatment, or discharge are expected. Wastewater, including stormwater runoff, and water generated during operations would be treated as pursuant to applicable permit requirements prior to discharge. Therefore, no cumulative impacts to water resources or water quality would be expected.

5.3 NOISE

The proposed project is not expected to increase existing noise levels within the project area. Operation of the other related actions would not effect the same noise-sensitive receptors simultaneously. No cumulative noise impacts would be expected.

5.4 TRANSPORTATION

The addition of project generated trucks during operations is not expected to adversely impact traffic conditions in the area. Based on the magnitude of other future projects in the project area, the small incremental increase in truck traffic would not change the service level on any of the roads used to transport bagasse. Therefore, no negative cumulative transportation impacts would be expected.

5.5 HUMAN HEALTH AND RISK OF UPSET

While the type and scope of future development in the vicinity of the proposed project is unknown, the potential cumulative impacts to the health and safety of sensitive receptors can be qualitatively assessed. The proposed action is not expected to create a health and safety impact to facility workers or to the general public. Therefore, no health and safety cumulative impacts would be expected.

5.6 ENVIRONMENTAL RESOURCES NOT AFFECTED

No impacts to biological or wildlife resources are anticipated at BCI's facility. All refurbishment activities would occur within the boundaries of the 50-acre industrialized area, except for the fallow 12-acre parcel that may be used for on-site storage of the bagasse. The U.S. Fish and Wildlife Service, in its comment to the draft EA dated July 21, 1999, concluded that "the proposed action is unlikely to result in direct impacts to Federal-trust fish and wildlife resources." Similarly, the U.S. Fish and Wildlife Service commented that its "records indicate that no Federally listed threatened, endangered, or candidate species presently occur within the project area . . . [t]herefore, no further consultation is required unless the scope or location of the proposed action changes, or project construction has not commenced within one year." See, Appendix E.

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APPENDIX A

SCOPING LETTERS

June 12, 1998

DISTRIBUTION LIST

SUBJECT: NOTICE OF SCOPING - ENVIRONMENTAL ASSESSMENT OF THE AGRICULTURE WASTE TO ETHANOL FUEL CONVERSION FACILITY, JENNINGS, LOUISIANA

It is the policy of the U.S. Department of Energy (DOE) to comply with all applicable environmental statutes, laws, and regulations, including the National Environmental Policy Act (NEPA). As part of DOE NEPA implementation procedures, it is DOE's policy to integrate community and public concerns into its decisionmaking process prior to taking action on proposed activities that have the potential to impact the human or natural environment. Accordingly, DOE will be preparing an Environmental Assessment (EA) to evaluate the potential environmental impacts of the modification, construction, and demonstration of a proposed agriculture waste to ethanol fuel conversion facility . One of the initial activities in the preparation of an EA is to conduct a "Scoping" process with affected regulatory agencies and other interested parties. The purpose of the scoping process is to identify areas of concern related to potential impacts to the human and natural environment related to this proposed project.

BC International Corporation (BCI) presented this project to DOE and has subsequently been selected for potential partial funding. The project consists of the construction and demonstration of a commercial scale (20 million gallon per year) agriculture waste to ethanol fuel conversion facility. The primary agricultural wastes that will be used are sugarcane bagasse and rice hulls. The old Shepherd Oil/BioCom facility located near Jennings, Louisiana is the site of this proposed facility. Portions of the existing facility (equipment for fermentation, ethanol production, storage, material distribution, bacteria propagation and waste treatment) will be reused as part of this proposed project . New equipment for hydrolysis and agriculture waste processing will be added as part of the proposed project. The proposed project site has been used for various types of ethanol production facilities since 1977. The general site location map is attached for your reference.

As part of our information gathering, representatives of our office conducted a initial site visit and a limited regulatory file review in April 1997. Additionally, DOE is seeking input regarding potential environmental impacts from the affected regulatory agencies and other interested parties by this letter. Please note that recipients of federal funding are responsible for obtaining permits under and compliance with all applicable Federal, State and local regulations. DOE is preparing an EA to assess the potential impacts of the proposed project prior to finalizing its decision on providing the solicited funds.

Please direct any initial comments you may have regarding the proposed project to Deborah Turner, NEPA Compliance Officer, Golden Field Office, by close of business June 26, 1998. Once the Predecisional Draft Environmental Assessment is prepared, copies will be provided to your organization for review and comment. If you are aware of any other parties that may be interested or should otherwise be involved in the review of our Environmental Assessment, please

provide that information to our office. Deborah can be reached by phone (303) 275-4746, fax (303) 275-4788, email deborah_turner@nrel.gov or the above address. Thank you for your interest and participation in our NEPA process.

Sincerely,

Frank M. Stewart
Manager

cc:
Deborah Turner, GO
Jim Spaeth, GO
Jeff Gatto, BCI
Dan Lowery, Dames & Moore

Concur: _____ DAT, _____ JJS

Response Date: June 18, 1998

File #: 8.1.4.9.3.2 - BCI EA

n:\nepa\ea\bci\scoping.wpd

DISTRIBUTION LIST
AGRICULTURE WASTE TO ETHANOL CONVERSION FACILITY
JENNINGS, LOUISIANA

Mr. Heinz Mueller
Chief, Office of Environmental Assessment
Environmental Accountability Division
Region 4
U.S. Environmental Protection Agency
Atlanta Federal Center
61 Forsyth Street, SW
Atlanta, GA 30303

Mr. J. Dale Givens
Secretary
Louisiana Department of Environmental Quality
P.O. Box 82263
Baton Rouge, LA 70884-2263

The Honorable Murphy J. "Mike" Foster, Jr.
Governor of Louisiana
State Capitol
P.O. Box 94004
Baton Rouge, LA 70804

Mr. Sam Hamilton
Regional Director
U. S. Fish & Wildlife Service
Southeast Region (Region 4)
1875 Century Blvd
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Ms. Gerri Hobdy
State Historic Preservation Officer
Office of Cultural Development
Dept of Culture, Recreation & tourism
P.O. Box 44247
Baton Rouge, LA 70804

KATHLEEN BABINEAUX BLANCO
LIEUTENANT GOVERNOR

State of Louisiana
OFFICE OF THE LIEUTENANT GOVERNOR
DEPARTMENT OF CULTURE, RECREATION & TOURISM
OFFICE OF CULTURAL DEVELOPMENT
DIVISION OF ARCHAEOLOGY

PHILLIP J. JONES
SECRETARY

GERRI HOBDY
ASSISTANT SECRETARY

July 6, 1998

Ms. Deborah Turner
Department of Energy
Golden Field Office
1617 Cole Boulevard
Golden, Colorado 80401-3393

Re: Proposed Agricultural Waste to Ethanol Fuel Conversion Facility
Jennings, Jefferson Davis Parish, Louisiana

Dear Ms. Turner:

Reference is made to Mr. Frank Stewart's letter dated June 12, 1998, which was received on June 15, 1998, concerning the above. A review of our files indicates that there are no sites or properties either listed on or which have been determined eligible for listing on the National Register of Historic Places in the proposed project area. In addition, there are no other known cultural resources in this area. As such, we feel that the proposed project will have no effect on significant cultural resources, and we have no objections. However, should any archaeological material be uncovered during ground altering activities, we request that work in that area be halted and this office be notified immediately. For future reference, note that as per 36 CFR Part 800.1(c)(ii), that the comment period for this office extends for 30 days from the receipt of any correspondence.

If we may be of further assistance, please contact Mr. Mike Mahady in the Division of Archaeology at (504) 342-8170.

Sincerely,

Gerri Hobdy
State Historic Preservation Officer

GH:MM:s

P.O. BOX 44247 • BATON ROUGE, LOUISIANA 70804-4247 • PHONE (504) 342-8170 • FAX (504) 342-8173

APPENDIX B

CHEMICAL STORAGE AND USE

List of Chemical Materials, Waste Products, and Saleable Products

Raw Materials	
Sulfuric Acid	Sulfuric acid as a toxic, corrosive, strongly acidic, colorless liquid that is miscible with water and dissolves most metals. It melts at 10° C; and is used in industry in the manufacture of chemicals, fertilizers, explosives, and in petroleum refining. It is considered incompatible with organic materials, chlorates, carbides, fulminates, and powdered metals. Sulfuric acid can react violently with water with the evolution of heat. It is recommended that skin and eye contact be prevented.
Ferric Sulfate	Ferric sulfate as yellow, water-soluble, rhombohedral crystals, that decomposes when heated. It is used as a chemical intermediate, disinfectant, soil conditioner, pigment, and analytical reagent, and in medicine.
Phosphoric Acid	Phosphoric acid is identified as water-soluble, transparent crystals, with a melting point of 42° C. It is used as a fertilizer, in soft drinks and flavor syrups, in pharmaceuticals, in water treatment, and animal feeds, and to pickle, and to rust-proof metals. It is considered incompatible with strong caustics and most metals. Phosphoric acid can readily react with metals to form flammable hydrogen gas and it should not be mixed with solutions containing bleach or ammonia. It is recommended that skin and eye contact be prevented.
Vegetable Oil	Vegetable oil is used as a defoaming agent and is an edible, mixed glyceride oil derived from plants. It is used in food oils, shortenings, soaps, and medicine, and as a paint drying oil.
Denaturant (gasoline)	Gasoline, used as a denaturant, is a fuel for internal combustion engines consisting essentially of volatile flammable liquid hydrocarbons. It is derived from crude petroleum by processes such as distillation reforming, polymerization, catalytic cracking, and alkylation. Gasoline is considered incompatible with strong oxidizers such as peroxides, nitric acid and perchlorates. It is recommended that skin and eye contact be prevented.
Custom Denaturants	In general a denaturant is an inert, bad-tasting, or poisonous chemical substance added to a product to make it unfit for human consumption.
Magnesium Sulfate	Similar to Epsom salts; naturally ocuring salt

Waste Products	
Gypsum	Gypsum is a mineral commonly as a sulfate mineral. It is not anticipated that the produced gypsum will be potentially hazardous and will be disposed of via BFI. Gypsum is currently under consideration as a saleable product (BCI 1997).
Waste Water	Waste Water is identified to be disposed of through river discharge and no component of the waste water is anticipated to be potentially hazardous.
Boiler Blow Down	Boiler Blow Down is identified to be disposed of through the waste water treatment system.
Bag House Residue	Bag House Residue is identified to be disposed of via BFI and it is not anticipated that any component of the residue is potentially hazardous.
Beer Well Stillage (going to waste water treatment)	Beer Well Stillage is identified to be disposed of through the waste water treatment system
Boiler Ash	Boiler Ash is identified to be disposed of and it is not anticipated that any component of the ash is potentially hazardous.
Cooling Tower Blow Down	Cooling Tower Blow Down is identified to be disposed of through the waste water treatment system.
Saleable Products	
Ethanol	Ethanol is a colorless liquid that is miscible with water and has a boiling point of 78.32° C. Ethanol can be used as a reagent and solvent. The OHSA toxicity value, or permissible exposure limits (PELs), for ethanol are 1000 ppm and 1900 mg/m^3(ACGIH 1996). It is anticipated that 10 million gallons per year of ethanol will be produced.
Industrial Grade CO_2	Industrial Grade carbon dioxide is a colorless, odorless, tasteless gas that is about 1.5 times as dense as air, it is also utilized as dry ice in solid form. Carbon dioxide can be incompatible or react with the dusts of various metals. The OHSA toxicity values, or PELs, are 5000 ppm and 9000 mg/m^3. It is anticipated that 22,000 tons per year of industrial grade CO_2 will be produced.

Source: Design basis assumptions, BCI, 1997

APPENDIX C

REGIONAL CLIMATE AND METEOROLOGY

EXISTING CONDITIONS

CLIMATE AND METEOROLOGY

Regional Climate

Louisiana has a humid, subtropical climate characterized by abundant rainfall spread through the year and by warm summers and mild winters. The mean temperature for the entire state is 67.4°F (Hansen, 1971). The mean temperature for southern Louisiana, where prevailing southerly winds and a network of bays, bayous, and lakes are moderating influences, is 53.2°F in January, the coldest month, and 82°F in July and August, the warmest months. Northern Louisiana has a January average of 48°F and a July average of 83°F.

The average rainfall for the entire state, based on a 48-year period, is 55.45 inches (Hansen, 1971). The mean annual precipitation for New Orleans and Shreveport are 59.3 and 43.38 inches, respectively (Hansen, 1971). Droughts rarely occur in southern Louisiana. Most of the heavy rainfalls occur during the warm season as the result of thunderstorms and tropical cyclones. Snow is rare in southern Louisiana, especially near the coast. When snow does fall in the southern section, it usually amounts to little more than a few flurries with the flakes melting as they touch the ground. Occasional snow falls are recorded in the northern part of the state (Hansen, 1971).

Local Topography and Meteorology

Louisiana extends over three major sections of the physiographic region known as the Gulf Coastal Plain: the East Gulf Coastal Plain, the Mississippi Alluvial Plain, and the West Gulf Coastal Plain. The Mississippi Alluvial Plain, a central region of lowlands, extends in a broad belt up the Mississippi with a width that ranges from 10 to 60 miles. The Mississippi River winds across the plain upon the summit of a ridge, which it has built up from its own deposits of silt. In each direction the land slopes away from the river in a succession of minor undulations, the summits of the ridges being occupied by small streams and oxbow lakes.

The more elevated areas east and west of the Mississippi Alluvial Plain are known as the Upland Districts. The uplands consist of low rolling hills and are designated uplands only in contrast to the low-lying land found over the rest of the state. The uplands are divided by the Mississippi River. The eastern section, the East Gulf Coastal Plain, lies north of Lake Pontchartrain and east of the Mississippi River. The western section, the West Gulf Coastal Plain, consists of West Louisiana Uplands, west of the Red and Calcasieu Rivers, and the North Louisiana Uplands, a wedge-shaped area lying roughly between the Red and Ouachita Rivers.

Jennings is located in the eastern portion of Jefferson Davis Parish in southwestern Louisiana, between Lake Charles and the city of Lafayette. Jefferson Davis Parish has four neighboring parishes: Cameron, Calcasieu, Acadia, and Allen. The parish is located within the West Coastal Plain. The land is primarily level, with an average elevation of 22 feet above sea level. There are a number of brackish lakes in southern Louisiana including Calcasieu Lake located approximately 40 miles southwest of Jennings. A wide fringe of coastal marshes extends along the 1,500-mile coast line of Louisiana, approaching Jennings approximately 20 miles to the south.

The maximum and minimum temperatures recorded between 1961 and 1990 for Lake Charles, located 35 miles west of Jennings, were 103° F and 11° F, respectively. During this same period, Lake Charles had a mean annual precipitation of 55.3 inches, a mean annual snowfall of 0.3 inches, an annual average chance of precipitation of 27.9

percent, and annual average wind speed of 8.6 mph, and an annual average percent of available sun of 69.9 percent (NOAA-CIRES Climate Diagnostics Center, 1997). The maximum and minimum temperatures recorded between 1961 and 1990 for Lafayette, located 40 miles east of Jennings, were 95° F and -12° F, respectively. During this same period, Lafayette had a mean annual precipitation of 47.9 inches, a mean annual snowfall of 0.4 inches, and an annual average chance of precipitation of 28.9 percent (NOAA-CIRES Climate Diagnostics Center, 1997). For the Jefferson Davis Parish, the January, July, and annual average temperatures are 55° F, 81° F, and 69° F, respectively, and the average annual rainfall is 74.63 inches.

APPENDIX D

DISTRIBUTION LIST FOR DRAFT ENVIRONMENTAL ASSESSMENT

Department of Energy
Golden Field Office
1617 Cole Boulevard
Golden, Colorado 80401-3393

June 7, 1999

DISTRIBUTION LIST

SUBJECT: Predecisional Draft Environmental Assessment of the Proposed Biomass to Ethanol Demonstration Project at BC International Corporation's Ethanol Facility in Jefferson Davis Parish, Louisiana (DOE/EA – 97-GO-09)

BC International Corporation (BCI) proposes to refurbish, retrofit, and operate a 20 million-gallon per year biomass to ethanol production facility in Jefferson Davis Parish, Louisiana. The subject Predecisional Draft Environmental Assessment (EA) evaluates the potential environmental impacts and cumulative impacts of the proposed project. The U.S. Department of Energy (DOE) will use the information contained in this document as the basis for its decision on whether to provide financial assistance to BCI for the construction and development of an ethanol commercial demonstration project that uses additional biomass waste (dry pulp waste from sugarcane industry). A description of the proposed project, a discussion of reasonable alternatives, and an environmental analysis have been integrated into the Predecisional Draft EA.

The Predecisional Draft EA has been prepared in conformance with the National Environmental Policy Act (NEPA), the Council on Environmental Quality regulations for implementing the procedural provisions of NEPA, and DOE's implementing procedures for NEPA. It is DOE's policy to consider the concerns and interests of the public and other interested parties in its decision making process. Accordingly, this letter services as notice that the Predecisional Draft EA is available for public review and comment for 30 days. At the close of the 30-day public comment period, comments received will be reviewed and a final EA issued. The final EA will include DOE's responses to the comments timely received. A copy of the Predecisional Draft EA may be obtained from DOE's Golden Field Office by contacting Mike Capone at telephone number (303) 275-4791.

Written comments should be submitted by July 7, 1999 to Timothy S. Howell, Acting NEPA Compliance Officer. Mr. Howell may be reached at 1617 Cole Boulevard, Golden, Colorado 80401-3393; facsimile number (303) 275-4790; or electronic mail address tim_howell@nrel.gov. Thank you for your interest and participation. If you have any questions you may reach Mr. Howell at telephone number (303) 275-4798.

Sincerely,

Frank M. Stewart
Manager

Enclosure

DISTRIBUTION LIST

SUBJECT: Predecisional Draft Environmental Assessment of the Proposed Biomass to Ethanol Demonstration Project at BC International Corporation's Ethanol Facility in Jefferson Davis Parish, Louisiana (DOE/EA – 97-GO-09)

Ms. Gerri Hobdy
State Historic Preservation Officer
Office of Cultural Development
Department of Culture, Recreation and Tourism
Post Office Box 44247
Baton Rouge, Louisiana 70804

Executive Director
Center for Energy Studies
Louisiana State University
c/o Mr. Allan G. Pulsipher
One East Fraternity Circle
Baton Rouge, Louisiana 70803-0301

Mr. Lawrence C. St. Blanc, Secretary
Executive Division
Louisiana Public Service Commission
One American Place, Suite 1630
Post Office Box 91154
Baton Rouge, Louisiana 70821-9154

Mr. C. Dale Sittig, Commissioner
Louisiana Public Service Commission
District 4
Post Office Box 928
Eunice, Louisiana 70535

Mr. Douglas R. Daigle, President
Jefferson Davis Parish Police Jury
Post Office Box 1409
Jennings, Louisiana 70546

The Honorable Gregory Norman Marcantel
Mayor of the City of Jennings
City Hall – City of Jennings
Post Office Box 1249
324 North Broadway
Jennings, Louisiana 70546

Department of Energy
Golden Field Office
1617 Cole Boulevard
Golden, Colorado 80401-3393

June 7, 1999

DISTRIBUTION LIST

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The Predecisional Draft EA has been prepared in conformance with the National Environmental Policy Act (NEPA), the Council on Environmental Quality regulations for implementing the procedural provisions of NEPA, and DOE's implementing procedures for NEPA. It is DOE's policy to consider the concerns and interests of the public and other interested parties in its decision making process. Accordingly, this letter services as notice that the enclosed Predecisional Draft EA is available for public review and comment for 30 days from the date of this letter. At the close of the 30-day public comment period, comments received will be reviewed and a final EA issued. The final EA will include DOE's responses to the comments timely received.

Written comments should be submitted by July 7, 1999 to Timothy S. Howell, Acting NEPA Compliance Officer. Mr. Howell may be reached at 1617 Cole Boulevard, Golden, Colorado 80401-3393; facsimile number (303) 275-4790; or electronic mail address tim_howell@nrel.gov. Thank you for your interest and participation. If you have any questions you may reach Mr. Howell at telephone number (303) 275-4798.

Sincerely,

Frank M. Stewart
Manager

Enclosure

DISTRIBUTION LIST

SUBJECT: Predecisional Draft Environmental Assessment of the Proposed Biomass to Ethanol Demonstration Project at BC International Corporation's Ethanol Facility in Jefferson Davis Parish, Louisiana (DOE/EA – 97-GO-09)

The Honorable Murphy J. "Mike" Foster, Jr.
Governor of Louisiana
State Capital
Post Office Box 94004
Baton Rouge, Louisiana 70804

Mr. J. Dale Givens, Secretary
Louisiana Department of
Environmental Quality
Post Office Box 82263
Baton Rouge, Louisiana 70884-2263

Ms. Paula Ridgeway, Manager
Technology Division, Energy Section
Department of Natural Resources
Post Office Box 94396
Baton Rouge, Louisiana 70804

Mr. Sam Hamilton, Regional Director
U.S. Fish and Wildlife Service
Southeast Region (Region 4)
1875 Century Boulevard
Atlanta, Georgia 30345

Mr. Michael P. Jansky
Regional Environmental
Review Coordinator
Office of Planning and Coordination,
U.S. Environmental Protection Agency
Region VI
Mail Code 6EN-XP
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Dallas, Texas 75202-2733

District Commander
Attn: Chief of Staff
Eighth Coast Guard District
Hale Boggs Federal Building
501 Magazine Street, Room 1328
New Orleans, Louisiana 70130-3396

Mr. Jeffrey Gatto
Vice President – Operations
BC International Corporation
990 Washington Street, Suite 104
Dedham, Massachusetts 02026

Mr. Mark Finkelstein, Director
Biotechnology Center - Fuels & Chemicals
National Renewable Energy Laboratory
1617 Cole Boulevard
Golden, Colorado 80401-3393

APPENDIX E

COMMENTS RECEIVED ON DRAFT ENVIRONMENTAL ASSESSMENT

FMS

Tim Howell
Bob Mauthe

State of Louisiana

Department of Environmental Quality

JUL 0 6 1999

M.J. "MIKE" FOSTER, JR.
GOVERNOR

Certified Mail# Zd627Y

J. DALE GIVENS
SECRETARY

FILE NUMBER: LA0051799

RECEIVED
JUL 12 1999
U.S. DEPT. OF ENERGY
GOLDEN FIELD OFFICE

Department of Energy
Golden Field Office
1617 Cole Boulevard
Golden, Colorado 80401-3393

Attention: Mr. Frank M. Stewart, Manager

Gentlemen:

Subject: Letter of no objection for Department of Energy, Golden Field Office to conduct proposed biomass to ethanol demonstration project at BC International Corporation's Ethanol Facility

This Office has received your letter of June 7, 1999 requesting a response to the Predecisional Draft Environmental Assessment (EA) for the proposed biomass to ethanol demonstration project at BC International Corporations's (BCI) Ethanol Facility located on LA Highway 90 East, Jennings, Jefferson Davis Parish.

After reviewing the document, it is our understanding that all treated process wastewaters and stormwater runoff from the proposed project will be discharged from the permitted outfalls in BCI's Louisiana Water Discharge Permit System (LWDPS) permit, WP 0506. These discharges should have no effect on the receiving stream, the Mermentau River. Nevertheless, all reasonable steps should be taken to avoid or reduce water quality impacts that could result from this project. As long as the conditions in the current LWDPS permit are complied with, this Office has no objection to the proposed project.

Should you have any further question, please feel free to contact Kema L. LaCaze at (225) 765-0543.

Sincerely,

Linda Korn Levy, Assistant Secretary
Office of Environmental Compliance

LKL:KLL
c: JDG-99-106
Kema L. LaCaze
Cheryl LeJeune
Office of Environmental Services
Permits Division

Southwest Regional Office
Office of Environmental Compliance
Surveillance Division

United States Department of the Interior

FISH AND WILDLIFE SERVICE
646 Cajundome Blvd.
Suite 400
Lafayette, Louisiana 70506

July 21, 1999

Mr. Timothy S. Howell
Acting NEPA Compliance Officer
Department of Energy
Golden Field Office
1617 Cole Boulevard
Golden, Colorado 80401-3393

Dear Mr. Howell:

The U.S. Fish and Wildlife Service has reviewed a Predecisional Draft Environmental Assessment (EA), DOE/EA-97-GO-09, transmitted to us by a June 7, 1999, letter from the Department of Energy's (DOE) Golden Field Office. The subject EA evaluates potential impacts associated with refurbishment and operation of an existing facility for commercial biomass-to-ethanol production near Jennings in Jefferson Davis Parish, Louisiana. The facility is a former oil refinery that was converted to produce ethanol from molasses and cereal grain, and has been inactive since December 1990. Much of the on-site equipment will be used, refurbished, or retrofitted to produce ethanol from bagasse, a biomass waste from the sugarcane industry. The proposed project would provide an alternative to fossil fuel energy sources as well as a solution to bagasse waste-disposal problems. The DOE will consider the EA, and public comments to it, in deciding whether to provide Federal funding to a private corporation for the proposed action. The Service has reviewed the information provided, and offers the following comments pursuant to the Endangered Species Act of 1973 (87 Stat 884, as amended; 16 U.S.C. 1531 et seq.) and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.).

General Comments

The EA is well-written and adequately assesses the potential human-related impacts associated with the proposed action, including effects on air quality, water resources and water quality, noise levels, transportation, and human health. According to the EA, the proposed action would result in no significant adverse impacts to any of those resources. No discussion of direct, indirect, or cumulative impacts to fish and wildlife resources was included; however, we conclude that the proposed action is unlikely to result in direct impacts to Federal-trust fish and wildlife resources.

The EA did not address the proposed plant capacity in terms of the potentially available amount of local, regional, and state-wide bagasse waste. We are concerned that the plant's need for bagasse could create a financial incentive for some rice growers to convert their fields to sugarcane. In addition, marginal areas now maintained as grassed edges, wooded fencerows, or moist-soil units also may be placed in sugarcane cultivation. Such areas provide important habitat for small game and other wildlife,

and flooded rice fields in Louisiana have traditionally provided habitat for wading birds, shorebirds, over-wintering migratory waterfowl, and nesting mottled ducks and fulvous whistling ducks. Moreover, the declining populations of some neotropical migratory landbird species that frequent open fields and edges is likely related to the disappearance of uncultivated edges and the changing configuration of cultivated and uncultivated areas (Rodenhouse et al. 1993). Therefore, several types of migratory birds could be harmed by changes in agricultural practices that reduce landscape diversity, drain moist-soil areas, or increase the acreage of intensively managed, non-grain row crops such as sugarcane.

Recent studies have noted the potential for increased crop production for alternative fuels. The General Accounting Office (GAO) has estimated that a nation-wide annual ethanol production of 2 to 5 billion gallons would increase net farm income, due in great part to a 5 to 9 percent increase in corn prices, and that "idle land" or other crop acreage would be converted to corn production for ethanol (GAO studies cited in Energetics, Inc. 1994). Moreover, land-use changes that support ethanol production also could include crop lands that have been set aside from production through Federal programs such as the Conservation Reserve Program. We recommend that the EA be revised to consider previous studies that predict land-use changes and repercussions to the agricultural commodities acreage base in response to alternative fuel production demands. In particular, the EA should include an analysis of possible indirect and cumulative effects to fish and wildlife resources resulting from potential increases in sugarcane cultivation for ethanol in southwestern Louisiana.

Specific Comments

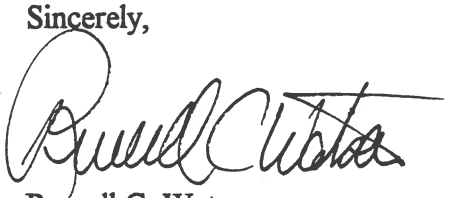
The EA did not address fish and wildlife resources; therefore, we have no specific comments.

Endangered Species

The EA did not address potential impacts to threatened or endangered species. Our records indicate that no Federally listed threatened, endangered, or candidate species presently occurs within the project area. Therefore, no further consultation is required unless the scope or location of the proposed action changes, or project construction has not commenced within one year.

We appreciate the opportunity to participate in the early planning stages of this project. If you have questions regarding our comments, please contact Ms. Jenness McBride (318/291-3123) of this office.

Sincerely,



Russell C. Watson
Acting Field Supervisor

cc: EPA, Dallas, TX
NMFS, Baton Rouge, LA
LA Dept. of Wildlife and Fisheries, Baton Rouge, LA
LA Dept. of Natural Resources (CMD), Baton Rouge, LA

LITERATURE CITED

Energetics, Inc. 1994. Fuel ethanol "special studies". Report prepared for U.S. Department of Energy, Western Regional Biomass Energy Program, Great Lakes Regional Biomass Energy Program. http://rredc.nrel.gov/biomass/doe/rbep/ethanol/

Rodenhouse, N.; L. Best; R. O'Connor; and E. Bollinger. 1993. Effects of temperate agriculture on neotropical migrant landbirds. Pages 280-295 *in* D. Finch and P. Stangel, eds. Status and management of neotropical migratory birds. USDA Forest Service, General Technical Report RM-229, Fort Collins, CO.

APPENDIX F

RESPONSE TO COMMENTS RECEIVED ON DRAFT ENVIRONMENTAL ASSESSMENT

Department of Energy
Golden Field Office
1617 Cole Boulevard
Golden, Colorado 80401-3393

August 23, 1999

Ms. Linda Korn Levy, Assistant Secretary
Office of Environmental Compliance
Department of Environmental Quality
Post Office Box 82215
Baton Rouge, Louisiana 70884-2215

Dear Ms. Levy:

This office is in receipt of your letter dated July 6, 1999 transmitting comments offered by the Louisiana Department of Environmental Quality in response to Predecisional Draft Environmental Assessment (DOE/EA-97-GO-09), Biomass to Ethanol Demonstration Project, BC International Corporation's Ethanol Facility in Jefferson Davis Parish, Louisiana. One of DOE's missions is to develop alternatives to current fossil fuel energy sources. DOE would like to demonstrate that biomass wastes are a viable source for the production of ethanol. Currently, agri-wastes are not seen as a resource, but rather as a liability because of rising waste disposal costs. DOE's proposed action is to provide technical assistance and partial funding to demonstrate the technology associated with producing ethanol from agri-wastes. The BC International Corporation (BCI) project would demonstrate at a commercial scale a process to produce ethanol from agri-wastes. The BCI project would also generate useful information on the performance of a commercial scale waste biomass-to-ethanol plant. The Department of Energy (DOE) appreciates the comments proffered by the Department of Environmental Quality in responding to this draft Environmental Assessment (EA).

The DOE will use this EA to support its decision-making with regard to the financial assistance agreement with BCI. Based on the analysis in the EA, DOE has determined that the proposed action is not a major Federal action significantly affecting the quality of the human or physical environment, within the meaning of the National Environmental Policy Act. Therefore, the preparation of an environmental impact statement is not required. Consequently, DOE will soon be issuing a Finding of No Significant Impact (FONSI) regarding its proposed action to provide financial assistance to BCI.

Again, we appreciate your comments and continued participation in our National Environmental Policy Act process on other projects in the future.

Sincerely,

Timothy S. Howell
Acting NEPA Compliance Officer
Office of Chief Counsel

Department of Energy
Golden Field Office
1617 Cole Boulevard
Golden, Colorado 80401-3393

August 23, 1999

Mr. Russell C. Watson
Acting Field Supervisor
U.S. Fish and Wildlife Service
646 Cajundome Boulevard, Suite 400
Lafayette, Louisiana 70506

Dear Mr. Watson:

This office is in receipt of your letter dated July 21, 1999 transmitting comments offered by the U.S. Fish and Wildlife Service (FWS) in response to Predecisional Draft Environmental Assessment (DOE/EA-97-GO-09), Biomass to Ethanol Demonstration Project, BC International Corporation's Ethanol Facility in Jefferson Davis Parish, Louisiana. One of DOE's missions is to develop alternatives to current fossil fuel energy sources. DOE would like to demonstrate that biomass wastes are a viable source for the production of ethanol. Currently, agri-wastes are not seen as a resource, but rather as a liability because of rising waste disposal costs. DOE's proposed action is to provide technical assistance and partial funding to demonstrate the technology associated with producing ethanol from agri-wastes. The BC International Corporation (BCI) project would demonstrate at a commercial scale a process to produce ethanol from agri-wastes. The BCI project would also generate useful information on the performance of a commercial scale waste biomass-to-ethanol plant. The Department of Energy (DOE) appreciates the comments proffered by FWS in responding to this draft Environmental Assessment (EA).

In response to the comments offered regarding fish and wildlife resources, the EA has been revised to include a discussion of the environmental resources not affected by BCI's project or by DOE's proposed action to provide further financial assistance to BCI. Specifically, your attention is directed to new sections that have been added to the EA: Sections 3.6 and 5.6. These new sections read as follows:

3.6 ENVIRONMENTAL RESOURCES NOT AFFECTED

The proposal by BCI is to refurbish and recycle an idle ethanol facility that is sited in an existing industrialized area. The area surrounding the facility has been industrialized since at least 1976 when the original facility (i.e., Shepherd Oil's refinery) was constructed. The idle ethanol facility is an "open air" plant (i.e., there is no enclosed operating building with walls *per se*) that covers approximately 50 acres of the total 110-acre industrialized parcel owned by BCI. BCI's refurbishment plans do call for the fabrication

and installation of new equipment to the "open air" plant. Some of the new equipment BCI plans to install will require some minor excavation so that larger and/or additional concrete support pads/footings can be used. Any such excavation will be appurtenant to the existing facility. There are no current plans to expand the facility beyond the 50-acre footprint. According to BCI's current plans, the facility may acquire an additional 12-acre parcel of land adjacent to the plant site to be used for on-site storage of the bagasse. This small parcel is not currently being used for industrial purposes; however, it is fallow. The parcel is currently plowed, but is crop-free.

Biological or wildlife resources that may have been present at BCI's facility were extensively disturbed by previous industrial and/or agricultural use. Native vegetation has been removed from the 12-acre parcel. The industrialized 50-acre area has little vegetation other than grasses and shrubs. No threatened or endangered species are known to occupy or use the 50-acre industrialized area or the undeveloped areas of the plant site (including the 12-acre parcel). There are no known jurisdictional wetlands within the industrialized area or the undeveloped areas at the plant site (including the 12-acre parcel).

5.6 ENVIRONMENTAL RESOURCES NOT AFFECTED

No impacts to biological or wildlife resources are anticipated at BCI's facility. All refurbishment activities would occur within the boundaries of the 50-acre industrialized area, except for the fallow 12-acre parcel that may be used for on-site storage of the bagasse. The U.S. Fish and Wildlife Service, in its comment to the draft EA dated July 21, 1999, concluded that "the proposed action is unlikely to result in direct impacts to Federal-trust fish and wildlife resources." Similarly, the U.S. Fish and Wildlife Service commented that its "records indicate that no Federally listed threatened, endangered, or candidate species presently occur within the project area . . . [t]herefore, no further consultation is required unless the scope or location of the proposed action changes, or project construction has not commenced within one year." See, Appendix E.

In response to the comments and recommendation offered regarding the direct and indirect affects DOE's biofuel program may have on land use changes that might be detrimental to fish and wildlife habitat, we have made no changes to this EA. Similarly, we have made no changes to the EA in response to the comments and recommendation offered regarding the direct and indirect affects BCI's project may have on land use changes that might be detrimental to fish and wildlife habitat. While DOE has made no changes to this EA as a result of your July 21, 1999 letter, this does not imply DOE has dismissed FWS's concerns out-of-hand.

As articulated in your July 21, 1999 letter, FWS appears concerned that BCI's demonstration project needs for bagasse would create a financial incentive for some farmers to convert rice fields and some marginal areas to sugarcane, possibly resulting in habitat loss for small game and other wildlife (e.g., migratory waterfowl). We have given consideration to this concern, and with BCI's assistance we reexamined three features of the proposed project plan: (a) the source of the bagasse; (b) the amount of available bagasse; and (c) feedstock needs in the event the facility expands in the future.

The source of the bagasse. With regard to the BCI project, there is no financial relationship between BCI and farmers and there is no direct or indirect economic incentive to farmers associated with the collection of the agri-waste (i.e., the bagasse). As proposed, BCI will obtain the bagasse only from sugar mills. The ethanol facility will not receive any bagasse directly from farmers. Further, sugar mills operate within a market driven system and buy sugar cane from farmers based on the mill's expected market needs. The mills do not typically set their mill volume based on the amount of sugar cane grown by the farmers. Essentially, the mills participate as part of the agri-futures market. A typical Louisiana sugar mill will start up in September and mill sugar for only about 100 days and shut down for the season prior to the Christmas/New Year holiday season. During this relatively short milling period, BCI reports that a typical mill will produce 30-33 tons of bagasse for every 100 tons of sugar cane it grinds. Again, BCI reports that a typical mill will burn about 20 tons of bagasse for its own energy needs, thus leaving about 10-13 tons of bagasse waste for every 100 tons of cane processed. The resulting 10-13 tons of unused bagasse is agri-waste that a mill will ordinarily pay to have transported and disposed of in a sanitary landfill. The BCI project, on the other hand, does not create an economic incentive for farmers to convert habitat generating crops like rice to sugar cane. However, it does create a disposal alternative to the problems associated with burning or landfilling agri-waste like bagasse.

The amount of available bagasse. The amount of agri-waste produced is obviously proportional to the amount of sugar cane milled. The more sugar cane milled, greater is the amount of residue agri-waste product (e.g., bagasse in this case) left over for disposal. BCI reports that there is currently an excess of bagasse available. BCI further reports that the surplus of bagasse greatly exceeds the amount of feedstock needed for its demonstration project. For example, BCI reports that in 1997 the mills in the Jennings, Louisiana area ground approximately 12,019,493 tons of sugar cane and in 1998 the amount increased to approximately 13,358,869 tons. The corresponding bagasse available, at a conservative 10 percent of the grind, amounted to approximately 1.2 million tons in 1997 and 1.3 million tons in 1998. The BCI project is projected to use only 0.6 – 0.7 million tons of bagasse per year (i.e., approximately one-half of the bagasse currently available per year in the Jennings, Louisiana area). At the present time, the amount of available bagasse from the mills significantly exceeds the amount needed by BCI for the demonstration project. Since farmers make no bagasse (this is a mill waste), and since there is significant excess bagasse available, there is no reasonably foreseeable future need for BCI to obtain its ethanol feedstock from farmers.

Feedstock needs in the event the facility expands in the future. Assume arguendo that BCI increases its project bagasse volumes to exceed the existing surplus or the mills starting treating bagasse as a revenue-generating commodity instead of a liability. In such a situation, BCI proposes a contingency to use other pre-existing agri-wastes such as waste rice hulls. The demonstration facility will be capable of using rice hulls as a backup feedstock. As with bagasse, the rice hulls are an agri-waste problem that rice millers generally landfill. Similarly, BCI would obtain the agri-waste directly from the rice mills and not from farmers. In addition, BCI reports the rice millers in the area of the demonstration project appear to be amenable to supplying all the waste rice hulls BCI might need. Therefore, even if BCI successfully expands its ethanol production beyond the demonstration stage or even if one particular argri-waste becomes a revenue-generating commodity, there is no reasonably foreseeable future need for BCI to obtain its ethanol feedstock from farmers.

As articulated in your July 21, 1999 letter, FWS also appears concerned that DOE's bioenergy program might have indirect and cumulative impacts to fish and wildlife resources resulting from increased cultivation of energy crops such as sugar cane. Again, we have given consideration to this concern. We have, however, concluded that an analysis of the indirect and cumulative impacts of DOE's national bioenergy program is beyond what is reasonably required under the National Environmental Policy Act for the EA associated with BCI's proposed demonstration project and DOE's proposed action to provide additional financial assistance to BCI. Nevertheless, FWS's concern over the programmatic effects of DOE's bioenergy program on fish and wildlife has been forwarded to the cognizant program elements within DOE headquarters.

The DOE will use this EA to support its decision-making with regard to the financial assistance agreement with BCI. Based on the analysis in the EA, DOE has determined that the proposed action is not a major Federal action significantly affecting the quality of the human or physical environment, within the meaning of the National Environmental Policy Act. Therefore, the preparation of an environmental impact statement is not required. Consequently, DOE will soon be issuing a Finding of No Significant Impact (FONSI) regarding its proposed action to provide financial assistance to BCI.

Again, we appreciate your comments and continued participation in our National Environmental Policy Act process on other projects in the future.

Sincerely,

Timothy S. Howell
Acting NEPA Compliance Officer
Office of Chief Counsel