



# The Louisiana State University Waste-To Energy Incinerator, January 1994

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## PREFACE

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This Environmental Assessment (EA) has been prepared by the U.S. Department of Energy (DOE) to analyze the environmental impacts of incinerating combustible, non-recyclable office wastes from Louisiana State University (LSU) administrative/academic areas and combustible, non-renderable biological and potentially infectious wastes from the School of Veterinary Medicine and Student Health Center, both part of the LSU campus complex. Under the State Energy Conservation Program, DOE proposes to cost-share construction of the incinerator. The EA has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended; the Council on Environmental Quality's regulations codified at 40 CFR Parts 1500-1508; and DOE's NEPA regulations codified at 10 CFR Part 1021. Also used in preparation of this EA was DOE's Office of NEPA Oversight's "Recommendations for the Preparation of Environmental Assessments and Environmental Impact Statements" (May 1993).

In determining the appropriate level of NEPA documentation for the proposed action, DOE reviewed NEPA implementing regulations in 10 CFR Part 1021 that identify actions normally requiring an EA (but not necessarily an environmental impact statement [EIS]) and actions normally requiring an EIS. Section 1021.400 (d) states: "If a DOE proposal is not encompassed within the classes of actions listed in the appendices to Subpart D, or if there are extraordinary circumstances related to the proposal that may affect the significance of the environmental effects of the proposal, DOE shall either: (1) Prepare an EA and, on the basis of that EA, determine whether to prepare an EIS or a FONSI [Finding of No Significant Impact]; or, (2) Prepare an EIS and ROD [Record of Decision]."

The following Subpart D classes of actions were carefully considered for applicability to the proposed action:

- Appendix C, "Classes of actions that normally require EAs but not necessarily EISs" {C15. Siting construction (or expansion), and operation of research and development incinerators for any type of waste and of any other incinerators that would treat non-hazardous solid waste (as designated in 40 CFR Part 261.4 (b))}.
- Appendix D, "Classes of actions that normally require EISs" {D12. Siting, construction, and operation of incinerators other than research and development incinerators or incinerators for non-hazardous solid waste (as designated in 40 CFR 261.4 (b))}.

The proposed action does not clearly fit either of the Subpart D typical classes of actions. The proposed action does not clearly fit into the C15 category because it does not involve a research and development waste incinerator, and the small percentage of infectious waste is not waste exempted under the Resource and Conservation and Recovery Act (RCRA) hazardous waste regulations at 40 CFR 261.4 (b). The proposed action also does not clearly fit into category D12. DOE intended that category to cover hazardous waste incinerators. In contrast, most of the waste to be burned at the proposed incinerator is not hazardous waste. Even the small amount of potentially infectious medical waste does not necessarily meet the characteristics in 40 CFR Part 261, Subpart C of the Federal RCRA regulations, and infectious waste is not specifically listed as hazardous waste in Subpart D of those regulations.

Because the proposed action is not encompassed within the classes of actions listed in the appendices to 10 CFR 1021, Subpart D, DOE prepared this EA. On the basis of the EA, DOE will determine whether to prepare an EIS or to issue a "finding of no significant impact."





## 1.0 PURPOSE AND NEED FOR ACTION

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This proposed action is for cost-shared construction of an incinerator/steam-generation facility at Louisiana State University under the State Energy Conservation Program (SECP). The SECP, created by the Energy Policy and Conservation Act (42 U.S.C. 6321 *et seq.*), calls upon DOE to encourage energy conservation, renewable energy, and energy efficiency by providing Federal technical and financial assistance in developing and implementing comprehensive state energy conservation plans and projects.

Currently, LSU runs a campus-wide recycling program in order to reduce the quantity of solid waste requiring disposal. This program has removed recyclable paper from the waste stream; however, a considerable quantity of other non-recyclable combustible wastes are produced on campus. Until recently, these wastes were disposed of in the Devil's Swamp landfill (also known as the East Baton Rouge Parish landfill). When this facility reached its capacity, a new landfill was opened a short distance away, and this new site is now used for disposal of the University's non-recyclable wastes. While this new landfill has enough capacity to last for at least 20 years (from 1994), the University has identified the need for a more efficient and effective manner of waste disposal than landfilling.

The University also has non-renderable biological and potentially infectious waste materials from the School of Veterinary Medicine and the Student Health Center, primarily the former, whose wastes include animal carcasses and bedding materials. Renderable animal wastes from the School of Veterinary Medicine are sent to a rendering plant. Non-renderable, non-infectious animal wastes currently are disposed of in an existing on-campus incinerator near the School of Veterinary Medicine building. Potentially infectious wastes from both the School of Veterinary Medicine and the Student Health Center currently are transported to a licensed waste disposal/incineration facility under a commercial contract. LSU has identified a need to find a means for on-campus incineration of combustible potentially infectious wastes that would be more cost effective, timely, and safer than the present arrangement of storing them for transport off-campus to a commercial waste disposal facility.

The School of Veterinary Medicine uses natural gas to provide the steam needed for building heat, hot water, sterilizers, autoclaves, and humidity control. Recently, the cost of natural gas has risen rapidly, so that providing steam for the School has become more expensive. Thus, the need for an inexpensive alternative fuel source to heat the building has grown.





## 2.0 BACKGROUND

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LSU is located in Baton Rouge, Louisiana, about 90 miles northwest of New Orleans (see Appendix A, Figure 1) and lies just east of the Mississippi River (see Appendix A, Figure 2). The site for the proposed facility (see Appendix A, Figure 3) is adjacent to the LSU School of Veterinary Medicine (approximately 100 feet north of the northeast corner of the building) and overlaps a current service area and pasture. There is currently an incinerator located next to the site of the proposed facility that was built in 1976 and is used only for burning non-infectious animal carcasses that cannot be sent to a rendering plant.

This environmental assessment (EA) has been prepared in connection with Louisiana State University's grant application under the SECP to help finance a waste incineration-steam generation facility. The total projected cost of the proposed action would be \$1,722,988; under the SECP grant, DOE would provide \$239,700 of SECP grant funds and would authorize \$361,536 of SECP Petroleum Violation Escrow-Exxon and \$1,121,572 of Louisiana State funds for the project, if approved.

The University's SECP grant application was submitted in January 1993 and has been evaluated for DOE grant assistance under applicable SECP guidelines. The application has been approved conditionally pending completion of NEPA review. A State of Louisiana Department of Environmental Quality air emissions permit already has been obtained for the incinerator/steam generator. A solid waste permit application has been submitted to the Louisiana Department of Environmental Quality and is currently pending. (NOTE: LSU has been informed it must re-submit the permit application [to comply with recent non-substantive, format changes only]; LSU has decided not to commit the funding for a contractor to re-format and re-submit the application until word is received that Federal funding for the proposed action has been approved. It is not known how long it will take to accomplish preparation, review, and approval of the re-submitted permit application.)

In 1991, LSU instituted a recycling program which has reduced the quantity of waste sent to landfill by recycling paper from the campus administrative and academic office areas. While this program essentially has removed recyclable paper from the waste stream, non-recyclable, non-hazardous combustible wastes continue to be disposed of in the municipal landfill. While the landfill currently being used is a new one with an anticipated remaining service life of at least 20 years (from 1994), the cost of disposal is rising, and the University would like to find a more efficient and effective disposal method in lieu of landfill. As noted above, non-infectious animal carcasses that cannot be sent to a rendering plant currently are disposed of in an existing incinerator. Potentially infectious wastes from the School of Veterinary Medicine and the Student Health Center are sent to a local commercial waste disposal/incineration facility under contract.





## 3.0 PROPOSED ACTION AND ALTERNATIVES

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### 3.1 The Proposed Action

The University proposes to construct a waste incinerator/steam generation plant to:

- Burn combustible non-recyclable, non-hazardous office wastes from LSU administrative/academic areas and combustible non-renderable biological and potentially infectious wastes from the LSU School of Veterinary Medicine (including its annex in the campus Life Sciences Building) and the LSU Student Health Center; and
- Generate steam from the incineration process to be used in the LSU School of Veterinary Medicine.

Such an incinerator/steam generation system is a typical waste-to-energy project and also is typical as a resolution of a hospital/medical school/medical research facility's need to dispose of potentially infectious waste quickly, effectively, and safely. It would replace the boiler presently used to generate steam for heating of the School of Veterinary Medicine (SVM) Building, eliminate the need to transport non-recyclable combustible waste to landfill, and permit the retirement of the 1976-installed incinerator currently used for cremation of non-renderable, non-infectious animal remains. It would serve as a demonstration of the effectiveness of using an incinerator to generate steam for process use (building heat, hot water, autoclaves, sterilizers, humidity control, etc.) as an alternative to continued reliance on non-renewable, more expensive natural gas.

The proposed incinerator/steam generation facility would utilize a natural gas-fired fixed-hearth incineration system. The installed unit would be a 1,000-lb/hr dual-chamber, modular incinerator/steam generator utilizing starved air combustion technology. The incinerator/steam generator and all its appurtenances would be housed in a 4,000-square foot prefabricated metal building. The site would occupy a current service area and some pasture area on University property.

Running continuously except for brief maintenance periods, the proposed facility would be capable of burning up to 12 tons of waste per day and would recover the BTU content of the incinerated waste to generate steam. The incinerator/steam generator would have a useful lifetime of approximately 20 years.

Implementation of the proposed action would involve the following activities:

- Construct a prefabricated metal building on pillars, with a hardened, crowned, sealed, and curbed concrete floor, to house the proposed incinerator/steam generator system.
- Purchase and install a 12-ton-per-day natural gas-fired waste incinerator and heat recovery boiler with dry lime scrubber;
- Connect the incinerator's heat recovery system to the SVM heating system; and
- Operate the incinerator and heat recovery boiler as a demonstration project on a 7-day, 24-hour-per-day basis.

Once the proposed system was operational, non-recyclable "paper" wastes from the office areas would be collected separately at the point of generation and transported to the incinerator via campus roads. Infectious and potentially

infectious wastes (commonly referred to as "red bagged" or "red bagged and boxed" wastes) from the SVM and the Student Health Center would be packaged at the point of generation and loaded into leak-proof, wheeled carts for delivery, via campus roads, to the proposed incinerator/steam generation facility. The facility would be an integral part of the LSU Integrated Waste Management Plan, which includes purchasing controls of chlorinated plastics, source separation of hazardous substances, recovery of marketable materials, composting, and landfilling (an "LSU Waste Management Schematic" is provided in Appendix A, Figure 4). A proposed site plan is provided in Appendix A, Figures 5 and 6, and a floor plan typical of the proposed fixed-hearth incinerator is provided in Appendix A, Figure 7. The only on-site processing other than incineration would be the shredding of such items as books and magazines by a small hand-loaded shredder to facilitate their incineration; there would be no shredding of potentially infectious wastes.

The site adjacent to the SVM was chosen as the location of the proposed facility due to the proximity of waste bedding material and animal carcasses at the SVM and the availability of a ready heat sink (i.e., the steam needs at the SVM). The location next to the SVM boiler room not only would reduce initial costs but also would reduce utility line maintenance costs and would allow present steam plant manpower to operate the proposed incinerator/steam generator.

The electric, gas, water, and communications utilities to the proposed facility would be supplied through the SVM boiler room via a subsurface trench (the available utility capacity is adequate and no off-site relocations or modifications are required). The proposed system would make use of the latest modular incinerator/steam generator and dry lime scrubber technology. The fixed-hearth dual-chamber incinerator would be capable of maintaining a minimum of 1,500 degrees F in the primary chamber and a minimum of 1,800 degrees F with a 1.5-second retention time in the secondary chamber (a 2,000-degree F/2.0-second secondary chamber may be provided if funds are available).

The incineration system would be charged with solid waste at a rate of approximately 1,000 lbs/hour for up to 24 hours per day. The waste-charging ram would be locked out at start-up until the incinerator reached operating temperatures and at any time during operation if minimum operating temperatures were not maintained. Off-gases leaving the secondary chamber would pass through the heat recovery boiler to recover energy from the hot gas and cool the gas stream before entering the air pollution control (APC) system. The APC system would utilize a dry lime scrubber to remove particulates and acid gases from the gas stream prior to discharge to the atmosphere.

As noted above, the solid wastes to be incinerated would be preprocessed through the use of the LSU Integrated Waste Management Plan. All operating equipment and solid waste storage would be enclosed completely in the prefabricated metal building. The solid wastes would be placed in leakproof carts and stored on a crowned concrete floor with a hardened surface, a perimeter curb, and joint sealants/waterstops at construction joints, rendering it virtually impervious to penetration of any accidental waste spillage or free liquids. Free liquids from the waste, floorwashing, cartwashing, boiler blowdown, and sanitary flushes would be contained within the facility building by the concrete floor slab, drain into the LSU sewerage system, and receive secondary treatment at a municipal wastewater treatment plant. Ash resulting from the combustion process (about 8 tons per week or 420 tons per year) would be stored temporarily in a wheeled 20-cubic-yard bin within the prefabricated building and transported off-site approximately weekly by a private contractor to the municipal landfill.

Construction and installation could commence within six months of approval of the proposed action. Once started, construction and installation of the proposed incinerator/steam generation system would require approximately 12 months, with full operation of the proposed system possible within 1 month of completion of construction. Once operational, the proposed system would reduce the quantity of waste presently going to landfill by approximately 3,015 tons per year. Of the 3,650 tons of waste per year that would be incinerated, the non-recyclable paper load would be 6.78 tons/day, the biological waste would be 3.2 tons/day, and the potentially infectious waste would be less than one-half of one percent of the total volume incinerated. Also, over 2,000 gallons of diesel fuel would be saved per year by not having to transport the waste to the municipal landfill.

As the waste was burned, heat would be generated. This heat would be recovered in a waste heat boiler that would generate steam to be used in the SVM Building. The SVM would use the steam year-round for heat, hot water, autoclaves, sterilizers, and humidity control. The steam produced by this plant would reduce natural gas consumption

by approximately 34,000 million cubic feet (MCF) per year. After the initial expenditure on plant and equipment, the project is expected to save \$133,918 per year of operation.>

Should the system fail, have to be shut down under established emergency procedures, or otherwise produce insufficient steam to meet the SVM's heating needs, the permitted natural gas-fired boiler currently used to generate heat for the School would be used as a back-up. During a brief shut-down (one to several days, contingent upon amount of waste vice temporary storage capacity), wastes for incineration simply would be held until the system came back on line. During a shut-down of more than several days, wastes would be disposed of through a combination of transportation to landfill of non-infectious wastes and transportation via commercial hauler to a licensed waste disposal/incineration facility for infectious wastes (for which contingency contracts would be in place).

The simple payback for the project would be thirteen years. The cost of building the facility would be offset over time by:

- Eliminating the costs of transporting and disposing of potentially infectious wastes at a commercial waste disposal facility;
- Eliminating the costs of transporting and disposing of non-hazardous, combustible, non-recyclable waste at the municipal landfill; and
- Reducing the use and incurred cost of natural gas.

The University has received a State of Louisiana small-source medical waste incinerator air emissions permit. They have made application for a State of Louisiana Subtitle D RCRA Part B solid waste incineration permit for a Type II-A residential/commercial solid waste processing facility. (NOTE: As mentioned previously, LSU must re-submit this permit application to comply with recent changes in the application's format requirements. Because of the time and expense involved in hiring a contractor to prepare the re-submission, LSU will not do this prior to learning that Federal support for the proposed action has been approved. It is unknown how long preparation, review, and approval of the re-submitted permit application will take to accomplish.)

## **3.2 Alternative Actions**

Possible alternatives to the proposed action include building and operating a landfill, finding markets for waste products, and reducing the amount of waste requiring disposal. Each of these possible alternatives was analyzed and eliminated from further consideration for the reasons discussed below.

### **3.2.1 Build and Operate a Landfill**

Building and operating a landfill is not a viable option, as it is not cost effective and there is a lack of available space. Environmentally, the majority of the nearby land that is undeveloped is unsuitable for a landfill -- the soil characteristics are sandy with a very low clay content, and the water table is very close to the surface. Thus, containment of leachate could be a major problem.

### **3.2.2 Find Markets for Waste Products**



Finding new markets for waste products is very difficult, and the University is already very active in this area. The University currently is collecting and recycling white and colored paper, newsprint, and corrugated paper (cardboard). Landscape debris is being compacted and used in landscaping projects. Non-infectious animal carcasses from the SVM are being sent to a rendering plant. In 1992 a program was begun to recycle telephone books on campus, whereby the books are converted to cellulose insulation. There is no current market for the mixed paper, magazines, and general garbage. The University will continue to look for markets for these items; meanwhile, the University must deal with the waste.

### 3.2.3 Reduce Wastes

This alternative is not a viable option for solving the University's waste problems. The University currently is composting much of the debris from landscaping activities (e.g., downed tree limbs, grass clippings, leaves, etc.). This compost is being used for landscaping purposes. The composting operation now meets most of the University's mulch needs. The University already is reducing waste as a means of controlling its budget, including the aforementioned recycling program. The University already has exercised most of the available waste-reduction methods, and thus it would be difficult to reduce wastes much further.

### 3.3 The No-Action Alternative

The No-Action Alternative would be to keep transporting non-recyclable, combustible wastes to the municipal landfill and potentially infectious waste to a commercial waste disposal/incineration facility. While the municipal landfill being used is a new one with at least 20 years of service life remaining (from 1994), landfill disposal is not the most efficient or effective means of disposing of the wastes. The University already has realized a slight increase in disposal costs since the Devil's Swamp landfill, to which they used to send their wastes, was recently closed; the University now must transport its wastes an additional four miles to the new landfill. Further, without the proposed incinerator/steam generation system, it would be necessary to continue using natural gas to heat the SVM Building, which would cause further depletion of this limited, non-renewable resource and would cost more than the incinerator-produced heat derived from the proposed action. Also, the cost of sending potentially infectious wastes to the commercial waste disposal/incineration facility would remain and likely would increase in the future.

Additionally, under the No-Action Alternative, the aging incinerator currently used for cremation of non-renderable, non-infectious animal remains would continue to be used. Approaching its twentieth year of use, this incinerator is approaching the end of its service life and, at some point, would have to be replaced, adding to LSU costs.

Finally, under the No-Action Alternative, the tentatively approved grant application would be denied. No DOE monies would go toward purchase and installation of a waste incinerator/steam generation plant at LSU. As a result, the potential benefits to be derived from the system's installation would not be realized. Further, non-cost-shared payment for the system would place an additional financial burden on LSU.





## 4.0 DESCRIPTION OF AFFECTED ENVIRONMENT

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### 4.1 Air Quality and Climate

Baton Rouge is on the east shore of the Mississippi River, about 90 miles northwest of New Orleans. The area is 64 feet above mean sea level, mean temperature is 67.7 degrees F, and average rainfall is about 60 inches per year. The Baton Rouge area is in non-attainment under the Clean Air Act for ozone with a classification of "serious." There is an aged incinerator next to the proposed site, currently used only to burn non-infectious, non-renderable animal carcasses, which would be shut down once the new facility is built and which, other than four permitted boilers in the University's main power plant and the boiler presently used to generate steam for the SVM's heat, is the only producer of air emissions within the local environs of the campus and adjoining properties. The commercial waste disposal/incineration facility to which LSU currently transports its small amounts of potentially infectious wastes is located about 45 miles southeast of the campus in Reserve, Louisiana. A wind rose of the Baton Rouge area is provided at Appendix B.

### 4.2 Ecological Resources

The LSU campus has been in use for seventy years and has been disturbed extensively. Consequently, the site does not provide significant habitat for animal or plant communities. Based on consultation with the U.S. Fish and Wildlife Service and the Louisiana Department of Wildlife and Fisheries, no Federal- or State-listed threatened, endangered, or rare plant or animal species or critical habitat is present on the site.(See Appendix C.)

### 4.3 Water Quality

No surface waters cross the site of the proposed action (see Appendix A, Figures 2 and 3). The nearest surface water to the site is the Mississippi River, which is 1,700 feet to the west. The direction of groundwater flow in the area is variable; generally, it flows toward the Mississippi River (westward) when the river is low and away from the river (eastward) when it is high. There are five active wells within 2,000 feet of the site (see Appendix A, Figure 6); these are relief wells to relieve pressure on the foundation of the SVM Building during high stages of the Mississippi River. The wells are artesian at high river stages, and the well water flows into the SVM subsurface stormwater drainage system. The relief well nearest the proposed facility is Relief Well #4, which is located approximately 80 feet south of the side of the proposed facility building. No public or industrial wells are located within a mile of the site. There is an irrigation well at a practice field more than 2,000 feet from the site of the proposed action.

The site of the proposed action is underlain by 12 groundwater aquifers ranging in depth from recent alluvial deposits near the surface to approximately 2,800 feet. The principal recharge source to the alluvial aquifer is rainfall, which is

an average of about 60 inches a year and a maximum of 10 inches over 24 hours every 25 years.

#### **4.4 Floodplains and Wetlands**

The proposed site is located about 1 foot above the 100-year flood plain. Based on a determination by the U.S. Army Corps of Engineers and Fromherz Engineers, Inc., there are no wetlands on the property. (See Appendix D.) (NOTE: The letter presently provided in the Appendix is to be replaced with a more current one; pending its receipt, a phone conversation between Peter Davidson of LSU and the Army COE has confirmed that there has been no change in the wetlands determination as made in the older letter.)

#### **4.5 Land Use**

The area is a college campus within a surrounding urban area (see Appendix A, Figure 2). The location for installation and operation of the proposed action would be next to the SVM Building, approximately 100 feet north of its northeast corner (see Appendix A, Figure 3). The site also adjoins pasture land and various research labs. There is residential housing 1,400 feet to the north and University housing 1,200 feet to the northeast. The Co-Recreational Facility (a sports activity building) is located 1,200 feet to the southeast. The Student Health Center, from which less than 1,000 pounds/year of potentially infectious waste would be transported for incineration, lies about 4,100 feet northeast of the proposed facility, near the mid-point of the campus's northern boundary.

The incinerator/steam generator complex would occupy 4,000 square feet within the city limits of Baton Rouge. Construction and operation of the proposed system would occur within the confines of the LSU complex. No additional lands are required for the proposed action. No prime, unique, or important farmlands are present at the site.

#### **4.6 Visual and Recreational Resources**

Views from the site of the proposed action are the SVM to the south, the Mississippi River levee to the west, pastures and residences to the north, and pastures to the east (see Appendix A, Figure 2). The terrain is mostly flat.

The nearby recreation areas are the University's Co-Recreational Facility 1,200 feet to the southeast and Baton Rouge Park Commission properties on the other side of campus. A small picnic area and a playground are about a mile away. There are two parks about 1.8 miles away. One park is a beach and picnic area; the other is a golf course and park.

#### **4.7 Historic and Archaeological Resources**

No resources of archaeological or historical significance are present in the area of the proposed action. (See Appendix E.)

## 4.8 Socio-economics

Baton Rouge is the state capitol of Louisiana and also houses the State's largest university, Louisiana State University. There are no particular socio-economic groups present that would be affected by this project. (See for information on housing and residences.)





## 5.0 ENVIRONMENTAL EFFECTS OF PROPOSED ACTION

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### 5.1 Air Quality

For operation of the proposed incinerator/steam generator, a small-source medical waste incinerator air emissions permit has been granted by the State of Louisiana Department of Environmental Quality, and the project would meet all current State and Federal requirements. Air emissions, including particulate and acid gas emissions, would be reduced by use of dry lime scrubber technology and preprocessing the waste through the campus recycling program, so that hazardous and toxic wastes, chlorinated plastics, and recyclables would be removed prior to incineration. The proposed action is permitted for incineration of 825 pounds per hour of waste containing 8,500 BTU per pound. The equivalent BTU content of 1,000 pounds of waste at 7,000 BTU per pound also is allowed under the permit.

While the proposed action would be a new source of air emissions, further emissions from it, in combination with other sources, would neither cause nor contribute to violations of Louisiana Ambient Air Quality Standards and would produce emissions within limits currently in effect as dictated by the Louisiana Department of Environmental Quality. (See Appendix F.) As stated in the air emissions permit, Prevention of Significant Deterioration, New-Source Pollutant Standards (NSPS), and National Emission Standards for Hazardous Air Pollutants (NESHAP) do not apply to the proposed action. Table 5-1 lists the action's permitted emissions.

**Table 5-1 Permitted Emission Rates from Proposed Incinerator**

Pollutant	Pounds/Hour	Tons/Year
PM <sub>10</sub>	0.0428	0.180
SO <sub>2</sub>	0.231	0.971
NO <sub>x</sub>	3.01	0.252
CO	0.06	0.252
Lead	9.66E-4	4.06E-3
CDD/CDF	8.25E-8	3.5E-7
HCl	1.78	7.476
VOC	0.066	0.25

As noted in Baton Rouge area is in non-attainment for ozone, with a classification of "serious." However, the proposed action is not expected to contribute notably to present area ozone concentrations individually or cumulatively. As noted in Table 5-1, the small-source medical waste incinerator permit already granted for the facility allows emissions of 3.01 pounds per hour and 12.642 tons per year for nitrogen oxides and 0.066 pounds per hour and 0.25 tons per year for VOCs. These emission levels are below the rates for which a conformity determination is required under recent amendments to the Clean Air Act (40 CFR Part 51.853 (b)).

As noted, once the facility was operational, a dry lime scrubber would clean the exhaust stream, and the stream would be monitored continuously to make sure the exhaust is within prescribed limits (e.g., for opacity, hydrochloric acid, particulates, carbon monoxide, and oxygen). Given its operating specifications and the permit parameters under which the University would be required to operate the facility, the incinerator effectively would destroy all of the infectious waste -- combustion efficiency has been estimated at between 99.94 percent to 99.975 percent. (See Appendix G.) With measures taken under LSU's Integrated Waste Management Plan to ensure such metals as arsenic, beryllium, cadmium, hexavalent chromium, nickel, or their compounds are not a part of the incinerator's feed stream, they would have no impacts on air quality or human health; should any wastes containing these metals be accidentally introduced into the feed stream, their quantities would be so small as to be virtually unmeasurable and effectively would have no adverse environmental effects on air quality or human health. Although known precursors to the formation of dioxins, including chlorinated plastics would be excluded from the waste materials to be incinerated some dioxins may be generated in the initial combustion process within the incinerator. However, temperatures in both chambers would be sufficiently high to destroy any dioxins present. An air dispersion model has been prepared as part of the solid waste permit application. The proposed facility's 70-foot stack is expected to be of sufficient height to disperse pollutants adequately before they sink to the surface. To prevent airborne release of ash resulting from the combustion process, the ash would be stored in leakproof metal containers within the facility building.

As already noted, air emissions would be maintained within permit requirements of the Air Quality Division of the Louisiana Department of Environmental Quality. If an emergency condition were to require bypassing of the air pollution control system, all waste charging to the incinerator would cease and the incinerator would be shut down as soon as possible within the operational constraints of the facility equipment.

Because they would be limited in duration to the 12-month construction period and would be mitigated through standard practices (e.g., spraying for dust control), there are no projected impacts from fugitive dust or smoke from construction of the proposed facility.

Finally, the reduced transportation to the landfill would result in fewer truck emissions, although this unestimated effect is almost certainly negligible.

Under the No-Action Alternative, there would be no additional impacts on air quality. However, the present incinerator used to burn non-renderable, non-infectious animal wastes from the SVM would continue to operate. While this would involve continued emissions (whose rates and concentrations have not been measured) from this facility, their present and, under the No-Action Alternative, continued impacts on area air quality are considered negligible. At some undetermined point, however, the aging, eighteen-year-old incinerator likely would have to be replaced. Also, under the No-Action Alternative, a contracted commercial waste disposal/incineration facility would continue to be used for disposal of LSU's potentially infectious wastes. Because the amounts of these wastes are so small, continued emissions (whose concentrations have not been determined) from their incineration are considered negligible. A possible impact under the No-Action Alternative would be the release, in the event of a transportation accident enroute from the LSU complex to the contracted waste disposal/incineration facility, of bacteria from commercially transported potentially infectious waste; although exact estimates of the amounts of such accidental bacterial releases have not been made, they are expected to be very small. Finally, the unmeasured but almost certainly negligible emissions from trucks currently transporting combustible, non-recyclable wastes to landfill would continue.

## **5.2 Ecological Resources**

Implementing the proposed action would not affect any natural areas or any wildlife habitats. No vegetation would be cleared during the proposed action's construction phase. No endangered or threatened species would be affected during the proposed action's construction or operational phases. No disturbance to wildlife resulting from construction or operations noise is expected due to the location of the site. Construction activities would not affect wildlife cycles adversely.

Under the No-Action Alternative, there is not likely to be any impact on ecological resources, as no modification of the present facility would be necessary until the aging incinerator presently used to incinerate non-renderable, non-infectious animal waste from the SVM had to be replaced. The only potential impact would be as a result of an accident involving the continued transport of potentially infectious waste under commercial contract to an area waste disposal/incineration facility. In the event of such an accident, it would be possible for bacteria from the transported waste to be released, with an undetermined effect on area plants or wildlife.

### **5.3 Water Quality**

Because no surface waters cross the site of the proposed action and the nearest surface water to the site is the Mississippi River 1,700 feet to the west (see Appendix A, Figures 2 and 3), the proposed action would have no impacts on surface waters.

Construction of the facility could have some minor negative impacts on groundwater quality, as oil and/or other materials used in construction could leach into the ground; appropriate mitigation techniques during construction would be implemented to minimize this possibility. Also, any dirt from construction that is not carted away could run off and contribute to river silting; however, with employment of appropriate mitigation techniques, the amount of dirt run-off from the site is expected to be extremely small.

Once built, the proposed action would have no negative impact on area groundwater quality. All operating equipment and solid waste storage would be completely enclosed within a pre-engineered metal building with an concrete floor rendered virtually impervious with a crown, hardened surface, and joint sealants. This design should eliminate the danger of leachate entering local groundwater.

Because there would be no waste storage outside of the proposed incinerator/steam generator building, stormwater run-off exterior to the building would be uncontaminated and would flow overland to the existing SVM subsurface stormwater drainage system. The incineration system would use either a mist of water to cool ash resulting from the combustion process or a water seal with wet ash removal; neither system would generate any free liquid. The air pollution control system would utilize a dry lime scrubber which would produce a dry waste with no free liquids. Free liquids inside the facility building would be generated by floor and cart washdown, boiler blowdown, and sanitary waste; these would be contained by the impervious concrete flooring and curbing and would be directed by floor drains to LSU's sanitary sewerage system, which discharges to Baton Rouge municipal waste water treatment facilities. These facilities possess adequate capacity for this discharge, the wastestream of which would be compatible with the municipal wastewater treatment process. No new discharge permit would be required; further, LSU, under the provisions of its present permit, would test the wastestream quarterly, and, to confirm compliance, the city periodically would perform random sampling. Water (i.e., surface water run-off, stormwater, and backflooding) would be prevented from entering the facility by elevating the building's floor slab on piling about 1.5 feet above the existing ground level and about 0.3 feet above the 500-year flood elevation (the existing land surface elevation is about 1 foot above the 100-year flood elevation); stormwater would flow into the existing LSU subsurface stormwater drainage system. Available utility capacities would be adequate. Water to be used for the steam heating presently is and would continue to be obtained from the local water company. The system would require an average of 2.1 million liters/year of water.

Under the No-Action Alternative, there most likely would be no changes in local water quality, as the present disposal method would remain in operation. This method, however, includes transport of combustible, non-recyclable wastes to the municipal landfill, where continued disposal of LSU waste could add to any potential future threat of leachate affecting area groundwaters.

## 5.4 Floodplains and Wetlands

No wetlands are affected by this proposal. The existing land surface elevation is about 1 foot above the 100-year floodplain; the incinerator/steam generator's operating equipment would be on raised pillars about 1.5 feet above the existing ground level and about 0.3 feet above the 500-year floodplain.

Under the No-Action Alternative, there would be no effect on local wetlands, as there are none in the vicinity of the proposed action, nor would there be any additional impact on area floodplains, as the present methods of waste disposal at LSU would continue.

## 5.5 Waste Management

The proposed action would meet all Federal and State requirements concerning solid waste disposal. The only solid waste generated and stored at the proposed facility would be bottom ash and fly ash/dry scrubber waste from the incineration of solid waste; there would be no on-site disposal of this ash at the facility.

As previously mentioned and discussed in greater detail below, potentially infectious waste would constitute a very small portion of the incinerator feed stream. RCRA includes "infectious characteristics" under its definition of "hazardous waste," and Federal RCRA regulations at 40 CFR 261.4 do not specifically exclude infectious waste from the hazardous waste regulations. However, under Federal RCRA regulations for hazardous waste, medical infectious waste does not necessarily meet the criteria for one of the four characteristics (ignitability, corrosivity, reactivity, or toxicity) delineated in RCRA regulations, Subpart C, and infectious waste is not specifically listed as hazardous waste in RCRA regulations, Subpart D. (Non-hazardous "medical waste" is covered by RCRA medical waste tracking provisions and regulations that pertain only to certain states and would not apply to the proposed facility.) States generally are allowed to make their own determination as to whether or not to regulate these wastes as hazardous wastes through their own medical waste and solid and hazardous waste regulations. The potentially infectious wastes LSU intends to incinerate in the proposed facility are considered by the State of Louisiana to be special waste, regulated as a listed hazardous waste, and not characterized as hazardous waste. (See Appendix H.)

A permit under RCRA regulations Part B, Subtitle D for a Type II-A facility for the processing of residential/commercial solid waste has been prepared for approval by the Louisiana Department of Environmental Quality. (NOTE: LSU has been informed it must re-submit the permit application [to comply with recent non-substantive, format changes only]; LSU has decided not to commit the funding for a contractor to re-format and re-submit the application until word is received that Federal funding for the proposed action has been approved. It is not known how long, once word is received, it will take for preparation, review, and approval of the re-submitted permit application.) Once approved, the requested permit would allow LSU to collect and temporarily store combustible, non-recyclable waste from their academic/administrative offices and combustible biomedical, potentially infectious waste from the School of Veterinary Medicine and the Student Health Center and to temporarily store ash from the combustion process prior to its being transported by a commercial hauler to the municipal landfill.

All construction debris from the proposed action would be disposed of in accordance with Louisiana solid waste disposal regulations which implement Federal requirements.

Appropriate procedures would be utilized for handling of the two solid waste streams (wastes from the SVM and the Student Health Center and non-recyclable office wastes from administrative/academic areas) delivered to the proposed facility. The solid waste arriving at the proposed facility would be "preprocessed," first, under the University's Integrated Waste Management Plan's materials purchasing controls, and, second, by source waste separation and receiving controls at the proposed facility to remove hazardous materials, acid gas precursors, and recyclable materials.



Potentially infectious waste from the SVM (between about 22,000 and 35,000 pounds per year) and the Student Health Center (less than 1,000 pounds per year) would be less than one-half of one percent of the total volume incinerated. These wastes would include such items as non-renderable, potentially infectious animal carcasses, blood, tissues, etc. from the SVM and such biomedical wastes as syringes, swabs, Q-tips, towels, etc. from the Student Health Center.

Domestic and non-infectious biomedical wastes (constituting over 99% of the waste to be incinerated) would include such items as non-recyclable, combustible paper wastes from the University's administrative and academic offices and the following items from the SVM: animal bedding (e.g., straw, hay, sawdust, fecal matter, etc.); non-renderable, non-infectious animal remains; waste-basket materials; hand-towels from bathrooms; and staff scrub suits, tubing, needles, syringes, slides, etc.

Potentially infectious wastes for incineration would be either "red bagged" or "red bagged and boxed" at the point of generation prior to being loaded into leak-proof, wheeled carts. Potentially infectious wastes would be segregated from other wastes delivered to the facility, would be placed by hand into the incinerator waste hopper (with all personnel wearing appropriate personal protective equipment) and charged to the incinerator by manual actuation of the charging ram, and would have separately maintained disposition records to meet regulatory requirements and to verify that all packaged waste delivered to the facility is incinerated. (Medical wastes which contain antineoplastic or chemotherapeutic materials would not be incinerated unless the incinerator is equipped with a 2,000-degree F/2.0-second secondary chamber under an alternate bid. Such wastes would be segregated at the point of generation and disposed of by a properly permitted contractor.)

The non-hazardous waste that would be burned would be collected by LSU Facility Services employees in plastic bags housed in wheeled dumpsters to minimize contamination of the waste stream. These dumpsters would be trucked to the incinerator/steam generator along University and State roads. The bagging process, tight-fitting lids/tarpaulins, and similar procedures would minimize, if not completely eliminate, any litter during the transportation of wastes. The transportation of waste is planned for the day shift. Any hazardous wastes removed from the waste stream would be placed in a hazardous waste storage cabinet for pick-up by the hazardous waste disposal contractor, and any unacceptable wastes (e.g., PVC piping or recyclable metals) would be placed in a cart for additional processing (e.g., recycling or landfilling). The proposed action itself would generate no hazardous wastes.

Appropriate procedures for spills of potentially infectious waste, facility breakdown, fire or explosion, natural disasters/inclement weather, and personal injury would be in place. (See discussions below on Safety and Health and Accident Analysis.) The following procedures would apply in the case of other abnormal conditions:

- If the waste supply were to exceed the incineration system's capacity, the excess waste would be directed to a permitted landfill under pre-existing contract. The excess waste could result from a special campus event, wet wastes that reduce system through-put capacity, or an incineration malfunction resulting in reduced system capacity.
- If an unusual waste, such as an oily or potentially hazardous waste, were detected in the waste stream, the supervisor would be notified. The waste would be segregated and identified to determine if the waste can be incinerated or if it requires special disposal.
- If hydrated lime supplies necessary for operation of the air pollution control system were to become depleted, the facility would cease operations until the necessary supplies are available.

The incinerator/steam generator is scheduled for 24-hour-per-day operation (with about 12 maintenance periods per year of about 2 days duration each). Given its operating specifications and the parameters under which the University would be required to operate the facility, the incinerator effectively would destroy all of the infectious waste (as noted earlier, overall combustion efficiency of the proposed incinerator has been estimated at between 99.94 and 99.975 percent. Fly ash would be transferred to the storage container by a screw conveyor to prevent release to the environment. Any combustible waste in the incinerator bottom ash recognizable as to its former character would be re-incinerated. All resultant ash would be non-putrescible, would not generate nuisance odors, and would not support vermin. The concentration of pollutants in the ash are expected to be qualitatively insignificant. Following completion

of ash testing procedures (any tested ash exceeding Louisiana Department of Environmental Quality permitted levels would be designated as special waste and would be handled in accordance with specified LDEQ procedures), the remaining ash (approximately 420 tons per year) would be stored temporarily in a 20-cubic-yard wheeled bin for approximately weekly disposal trips of about 8 tons per run and would be disposed of in the municipal landfill in accordance with State and Federal regulations. The burning process would reduce the volume of the waste by 90%; the result would be over 3,000 tons of waste per year that would not have to go to the landfill.

In addition to landfill disposal, utilization of this ash (e.g., use as a recycled item for road construction, as a cement component, etc.) is under consideration, with marketability of the ash as the primary limiting factor to this alternative.

Under the No-Action Alternative, there would be no construction waste or ash (other than that from the incinerator presently used to dispose of non-renderable, non-infectious animal waste) to dispose of, and present waste management methods would continue unchanged. Campus non-recyclable, non-hazardous, combustible wastes (approximately 3,650 tons a year, at a cost of about \$68,000 a year) would continue to be disposed of at the municipal landfill. Not only would this involve continued and, later, increased disposal costs for LSU, but it also would contribute to continued landfill disposal of wastes that might be incinerated and converted to energy. The potentially infectious waste (approximately 35,000 pounds per year) that LSU sends under contract (for about \$16,000 a year) to a commercial waste disposal/incineration facility would continue to be sent, rather than being disposed of more expeditiously and safely under the proposed action.

## **5.6 Land Use**

Approximately 1.8 acres of an existing pasture area would be developed to make room for a fence and to allow for re-routing of a small dirt road (see Appendix A, Figure 5) to permit access to the proposed facility; this pasture land, however, is part of the existing campus setting. No new roads would be built for this project. The state of Louisiana has indicated by letter that the proposed facility would not conflict with any plans or proposed facilities, and the University has indicated by letter the proposed action's compliance with existing University land-use requirements.

Under the No-Action Alternative, there would be no land use impacts, as the present use of area land would not be changed.

## **5.7 Visual and Recreational Resources**

Upon completion of the proposed action's construction phase, the final appearance of the facility would be consistent with the existing campus buildings and the character of the surrounding neighborhood. The proposed action would not affect existing recreation areas. The stored solid waste and operating equipment would be concealed from view by the metal building. The nearest area is the Co-Recreational Facility 1,200 feet to the Southeast. Because of the distance and the facility's indoor location, no impacts are expected.

Under the No-Action Alternative, there would be no impacts on existing visual and recreational resources.

## **5.8 Historic and Archaeological Resources**

Based on consultation with the State Office of Cultural Development, Department of Culture, Recreation, and Tourism, the proposed action would have no impact upon historic or archaeological resources.

Under the No-Action Alternative, there would be no impacts on historic and archaeological resources, as there are none in the area.

## **5.9 Socio-economics**

The economic impact of the incinerator/steam generator would be negligible. The construction and operation of the facility would have a negligible impact on employment in both the short and long term. A small number of workers from local business(es) would be involved in the 12-month construction phase of the proposed action. Once operational, the proposed system would require only one additional full-time employee (an operating engineer) and the services about 16 hours a week of labor for clean-up activities.

An air dispersion model has been prepared as part of the solid waste permit application. With the 70-foot height of the stack and the prevailing winds (see Baton Rouge Wind Rose at Appendix B), it is expected that emissions would not have significant impacts on the areas surrounding the site (see Appendix A, Figure 2), including the residential areas to the north. Because the pollutants would be spread over such a diffuse area, it is unlikely any single socioeconomic group would be affected adversely by the incinerator/steam generator.

Under the No-Action Alternative, there would be no socio-economic impacts, although any employment that might occur under the proposed action would be foregone.

## **5.10 Noise**

Increased sound levels would be generated during construction activities associated with the proposed action. Because they are expected to be very minor, the precise levels of these temporary noise levels were not measured. However, since the nearest residence is roughly 1,400 feet and the nearest University housing is about 1,200 from the site, impacts should be negligible. Any construction activities would be limited to standard working hours. Once operational, noise associated with the proposed action would be at imperceptible levels to surrounding residences. Work place noise exposure from the proposed action would be maintained within established State and Federal standards.

Under the No-Action Alternative, there would be no additional noise impacts beyond those that already occur at the site.

## **5.11 Safety and Health**

No negative impacts to occupational health and safety are expected to result from routine operations under the proposed action. Any potential exposures of workers to hazards would be minimized by a combination of engineering controls and implementation of appropriate work practices and procedures, as directed by Federal and state

occupational safety and health regulations. The area would be fenced off during construction to protect students and staff.

After construction completion, the LSU Assistant Director for Energy Services would be responsible for verifying that the proposed facility remained in compliance with Occupational Safety and Health Administration, National Fire Protection Association, Louisiana Department of Environmental Quality, and other relevant standards and for monitoring operations for deficiencies in facility equipment and personnel training. The incinerator/steam generator would be housed within an enclosed structure with limited access to increase safety. The facility would be fully sprinklered, with the sprinkler system connected to the fire detection system. The fire detection system would also be connected to an alarm at the campus police station, which is on 24-hour duty and has a direct line to the local fire department. In addition, the potentially infectious wastes would be stored in a separate, sealed storage area; personnel handling such wastes would be outfitted properly in personal protective equipment, as required by applicable safety standards and regulations. Appropriate emergency care provisions, contingency plans, and safety training would be in place. Should potentially infectious wastes be released from their packaging, facility personnel would don personal protective equipment, use absorbents to contain liquid, spray waste with disinfectants, repack the waste for incineration, and disinfect the contaminated area in accordance with OSHA and State infectious waste regulations. Appropriate safety and health procedures would be included for such contingencies as breakdowns, inclement weather, and such emergencies as fire, explosion, and natural disasters (e.g., hurricanes, flooding, and earthquakes). (See Accident Analysis.)

Under the No-Action Alternative, it is possible that a vehicle transporting potentially infectious wastes under contract to a commercial waste disposal/incineration facility (as is presently done) could have an accident; in this case, implementation of procedures under OSHA and State infectious waste regulations would mitigate against adverse impacts from such an accident. Otherwise, there would be no additional impacts to public or worker safety and health, as present methods of operation would continue, including continued protection against potential worker exposure to hazards through the use of engineering controls and implementation of appropriate work practices and procedures.

## **5.12 Transportation**

It is expected that the proposed action would generate an insignificant number of vehicles during either its construction or operational phases. Further, because of low traffic projections, motor vehicle emissions would be insignificant.

Construction activities could result in an estimated increase of four vehicles daily. This small increase in traffic volume can easily be accommodated by the existing transportation network.

The facility would have only one new employee once operational, creating an estimated increase of only one vehicle daily.

In addition, transportation from the campus to the landfill would be reduced due to the lower amount of waste delivered to the landfill. With approximately one trip of approximately 7 tons of ash to the municipal landfill per week<sup>2</sup>, this effect, too, almost certainly would be negligible.

Under the No-Action Alternative, there would be no transportation impacts additional to those that presently exist.

## **5.13 Accident Analysis**

Reasonably foreseeable accidents that could occur under the proposed action include: spills of potentially infectious waste, facility breakdown, fire or explosion, natural disasters/inclement weather, and personal injury. Each of these accident scenarios either has a very low probability of occurrence, or the impacts are expected to be negligible, or both. Therefore, they are discussed below in qualitative terms only. The following discussion includes measures that would be taken in the event of a given accident.

Spills of Infectious Waste. This is a low-probability event with negligible consequences to human health or the environment. If infectious wastes were released from their packages, facility personnel, equipped with personal protective equipment, would use absorbents to contain liquids, spray waste with disinfectants, re-package the waste for incineration, and disinfect the contaminated area in accordance with OSHA and state infectious waste regulations. The proposed facility would maintain a spill containment and clean-up kit with absorbents, disinfectants, packaging materials, disposable protective clothing, respirators, shovels, brooms, etc. to supplement required OSHA personal protective equipment. As a result of these contingency plans, impacts of a spill on workers, staff, students, or other persons and the environment would be negligible.

Breakdown. This is a low-probability event with negligible consequences to human health or the environment. Any major failure or disruption of natural gas supply would result in the diversion of incinerator gases to the emergency bypass stack, which is programmed to "fail open." Feeding of the incinerator would be stopped, and the waste in the incinerator would be allowed to burn down. An immediate review of the malfunctioning equipment would begin in consultation with the vendor's service personnel. The entire system would remain off-line until the problem was identified and the malfunctioning system operation was within design specifications. Incoming solid waste would be diverted to a permitted landfill under pre-existing contract; infectious wastes would be stored at the point of origin, in the facility in accordance with time/temperature restrictions, or diverted to a permitted disposal facility under pre-existing contract. Appropriate notifications would be given to the Louisiana Department of Environmental Quality concerning the system shut-down and the temporary diversion of solid wastes would be documented. Because of the contingency waste disposal plans, impacts of a breakdown on workers, staff, students, or other persons and the environment would be negligible.

Fire. This is a medium- to low-probability event with potentially serious consequences for the two or three workers or other individuals in the immediate vicinity of the fire. Smoke and partially combusted products from the fire could have a short-term minor impact on the environment, primarily air quality. The most likely sources of fire are stored solid waste, the ash container, the baghouse, and natural gas-fired or electrical equipment. If the fire is small, facility personnel would notify the University Police/Safety Office by phone and assess the situation. Facility personnel, wearing personal protective equipment, would extinguish minor fires with facility equipment after donning appropriate personal protective equipment. The proposed facility would be equipped with a fire hose, chemical fire extinguishers, a fire blanket, utility water hoses, and an automatic sprinkler system. For a larger fire or a fire not first identified by facility personnel, the automatic wet pipe sprinkler system, which would be rated extra hazard over the waste staging area, would activate and trigger the automatic fire alarm. If facility personnel spot a fire before the automatic sprinkler system activates and, in turn, activates the automatic alarm, they will activate the manual fire alarm pull box. If facility personnel need assistance and a University Police/Safety Office officer has not arrived on-site, they will recontact the Safety Office. When fire department personnel arrive, the facility personnel would assist with facility equipment as directed (e.g., stopping equipment operation or cutting off electrical and natural gas services). University Police/Safety Office personnel, in coordination with assisting agencies, would determine if the building site or surrounding population should be evacuated. If the fire resulted in shut-down of the facility, established back-up waste disposal plans, as previously discussed, would be implemented. As a result of these procedures, impacts of a fire on workers, staff, students, or other persons and the environment are expected to be negligible.

Explosion. This is a low-probability event with potentially serious consequences for the two or three workers or other individuals in the immediate vicinity of the explosion, particularly from the mechanical effects of explosion debris. Debris from the explosion, smoke, and partially combusted products from a fire could have a short-term minor impact on the environment, primarily air quality. Some possible sources of explosion are natural gas, moderate pressure steam boilers, and organic vapors from contaminated solid waste. If an explosion were imminent, the immediate area would be evacuated and the situation would be reported to the University Police/Safety Office. If the situation allowed, facility personnel would try to define the cause and take such remedial action as equipment shut-down, stopping

natural gas flow, or removing ignition sources. If an explosion has occurred, personnel would withdraw to the facility office or evacuate to the Veterinary Medicine Building and contact the University Police/Safety Office. There would be an immediate determination of personnel accountability and the extent of any injuries, and first aid would be administered as needed. The University Police/Safety Office, in coordination with facility personnel and assisting agencies, would arrange for transport of any injured persons to medical care, implement damage containment, and determine if the surrounding population should be evacuated. If necessary, as soon as possible, established back-up waste disposal plans, as previously discussed, would be implemented. As a result of these procedures, impacts of an explosion on workers, staff, students, or other persons and the environment are expected to be minimal.

Natural Disasters. These are low- to medium-probability events with negligible consequences to human health or the environment (at least in terms of disruption to the waste incineration process). Such disasters would include earthquake (highly unlikely), hurricane (fair probability from June through November, the recognized hurricane season), and flooding (a low probability considering that the equipment and storage area floors would be above the five hundred year flood plain). Any of these events could cause physical damage to the building structure, to the facility equipment, and to equipment alignments and result in disruptions of facility supplies like electrical power, natural gas, and chemicals. University facility personnel would coordinate LSU maintenance and vendor maintenance personnel to evaluate any damage and determine operational capabilities. Delays in resupply services would be determined and alternate sources would be evaluated. If necessary, the pre-existing contracts for alternate waste disposal would be implemented. Because of the contingency waste disposal plans, impacts of a natural disaster on workers, staff, students, or other persons and the environment would be almost non-existent.

Personal Injury. This is a low- to medium-probability event, but the impacts on personnel could be serious. Impacts on the environment are anticipated to be nearly non-existent. Facility personnel would be trained in first aid/CPR and have a complete first aid kit and eyewash/shower at the facility. These personnel would notify the University Police/Safety Office of the injury, obtain assistance from the Veterinary Medicine Building if help is needed to rescue an injured person, administer first aid, and prepare the injured person for transport to medical care. An accident/illness report would be prepared to document the injury, identify the cause of injury, and recommend changes to prevent recurrence of the accident.





## 6.0 LIST OF PERSONS/AGENCIES CONSULTED

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State of Louisiana Department of Environmental Quality, Office of Solid and Hazardous Waste.

State of Louisiana Department of Environmental Quality, Office of Air Quality.

State of Louisiana Department of Health and Hospitals.

State of Louisiana Department of Natural Resources, Energy Division.

State of Louisiana Department of Wildlife and Fisheries.

U.S. Army Corps of Engineers New Orleans District, Operations and Readiness Division, Regulatory Functions Branch.

State Historic Preservation Officer, State of Louisiana Department of Culture, Recreation and Tourism, Office of Cultural Development.

Louisiana Department of Health and Hospitals.

MBB-Trecon, Inc.

EPA, Office of Waste Programs Enforcement, RCRA Enforcement Division, Policy and Regulatory Operations Branch.

EPA, Office of Air Quality Planning and Standards.

EPA, Medical Waste Coordinator.





## 7.0 REFERENCES

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1. "Permit Application, Solid Waste Incineration Facility, for Waste Incinerator/Steam Generation Plant, Louisiana State University, Baton Rouge, Louisiana (Draft)," submitted by the State of Louisiana Division of Administration Facility Planning and Control, Baton Rouge, Louisiana to State of Louisiana Department of Environmental Quality, Office of Solid and Hazardous Waste, as prepared by Fromherz Engineers, Inc., New Orleans, Louisiana, January, 1992.
2. "LSU Waste Incinerator/Steam Generation Plant Technical Report," Peter N. Davidson, P.E., Director, Energy Services Department, Louisiana State University.
3. Letter dated June 7, 1993, subject: LSU Waste Incinerator/Steam Generation Facility, from Peter N. Davidson, P.E., Director, Energy Services, Louisiana State University.
4. Letter dated July 20, 1993, subject not stated, from Peter N. Davidson, P.E., Director, Energy Services, Louisiana State University.
5. "State of Louisiana Department of Environmental Quality Small Source Permit, Medical Waste Incinerator," December 28, 1992.
6. Letter dated March 9, 1990, subject: Waste Incinerator/Steam Generator Plant, Louisiana State University, from Virginia Van Sickle, Secretary, Louisiana Department of Wildlife and Fisheries.
7. Letter dated January 29, 1990, from Ronald J. Ventola, Chief, Regulatory Functions Branch, Operations and Readiness Division, New Orleans District, U.S. Army Corps of Engineers.
8. Letter dated August 1, 1991, subject: Waste Incinerator/Steam Generation Plant, Louisiana State University, from Leslie P. Tassin, State Historic Preservation Officer, State of Louisiana Department of Culture, Recreation and Tourism, Office of Cultural Development.
9. Letter dated April 4, 1994, subject: Environmental Impact Request, Louisiana State University, Medical Waste Incinerator Air Permit No. 0840-00223-00, from Gustave A. Von Bodungen, Assistant Secretary, State of Louisiana Department of Environmental Quality, Office of Air Quality.
10. Phone conversation, February 24, 1994, between William Feild of Analytical Services, Inc. and George Smith, Louisiana Department of Environmental Quality, Air Quality Division.
11. Letter, February 25, 1994, subject: Environmental Analysis for LSU Medical Waste Incinerator, from Kenneth Lui, Chief Engineer, MBB-Trecan, Inc.
12. Phone conversations, between February 17 and February 25, 1994, between William Feild of Analytical Services, Inc. and the following:
  - Michael Petruska, EPA Regulatory Development Unit;
  - Jeff Brooks, EPA RCRA Hotline;
  - Kristina Meson, HQ, EPA Medical Waste Coordinator;
  - Mickey Post, EPA Office of Waste Programs Enforcement, RCRA Enforcement Division, Policy and Regulatory Operations Branch.
13. Phone conversations, between February 17 and February 25, 1994, between William A. Feild, Jr., Analytical Services, Inc., and:
  - Mia Tounsel, Louisiana Department of Environmental Quality, Office of Solid and Hazardous Waste, Solid Waste Division, Permits Section;
  - Debbie Swiler, Louisiana Department of Health and Hospitals.
14. Letter dated April 26, 1994, subject: Medical Waste Incinerator, from William J. Mollere, Administrator, State of Louisiana Department of Environmental Quality, Office of Solid and Hazardous Waste, Solid Waste Division.



15. Letter, dated August 20, 1991, from R. Brady Broussard, Chairman, Louisiana Resource Recovery and Development Authority, Louisiana Department of Environmental Quality.
16. Letter, dated September 9, 1991, from Joe Kelly, Executive Director, and Dr. Jerry J. Baudin, Vice Chancellor for Business Affairs.

