9. THE RELATIONSHIP BETWEEN SHORT-TERM USES OF THE ENVIRONMENT AND LONG-TERM PRODUCTIVITY

The proposed facilities' main site would occupy about 35 acres, and a short onsite transmission line (approximately 3,200 ft in length) would occupy a small amount of additional land. The facilities would consume resources including coal, natural gas, water, and small quantities of process chemicals, paints, degreasers, and lubricants (Section 8). The proposed facilities would use some of the existing Stanton Energy Center's infrastructure (e.g., roads, rail loop, rail car unloading building, and natural gas line), which would reduce duplication of facilities and infrastructure. The project would generate air emissions, liquid effluents, and solid wastes. However, no process waste streams or water treatment discharges would be released off the site. Gasification ash would be used beneficially to the extent possible and would be placed in the onsite landfill only if no beneficial use were found. Anhydrous ammonia and sulfur byproducts would be recovered and marketed.

The long-term benefit of the proposed project would be to demonstrate advanced power generation systems using IGCC technology at a sufficiently large scale to allow industries and utilities to assess the project's potential for commercial application. The proposed project would minimize SO_2, NO_x, mercury, and particulate emissions. The project is expected to remove up to 95% of the SO_2 produced in the IGCC process using coal that contains up to 0.4% sulfur. The removal of nearly all of the fuel-bound nitrogen from the synthesis gas prior to combustion in the gas turbine would result in appreciably lower NO_x emissions compared to conventional coal-fired power plants. Over 90% of the mercury would be removed. Over 99.9% of particulate emissions would be removed using high-temperature, high-pressure filtration (rigid filters housed in metal cylinders). Approximately 25% less CO_2 would be produced compared to typical emission rates at ***existing,*** conventional coal-fired power plants.

The ability to show prospective domestic and overseas customers an operating facility rather than a conceptual or engineering prototype would provide a persuasive inducement to purchase advanced coal utilization technology. The design size for the proposed project was selected to convince potential customers that the IGCC technology, once demonstrated at this scale, could be commercialized without further scale-up to verify operational or economic performance. Successful demonstration would enhance prospects of exporting the technology to other nations and may provide the single most important advantage that the United States could obtain in the global competition for new markets.