metals, nickel, and cyanide; (6) results from total constituent analyses for sulfide and reactive sulfide; (7) results from total oil and grease analyses; (8) results from characteristics testing for ignitability, corrosivity, and reactivity; (9) results from total constituent analyses for 70 volatile organic and semivolatile organic constituents, including the TC organic constituents (excluding pesticides and herbicides); (10) results from the TCLP analyses for 63 volatile organic and semivolatile organic constituents, including the TC organic constituents (excluding pesticides and herbicides); and (11) groundwater monitoring data collected from wells monitoring the on-site landfill.

BSC conducted primary metal-making and coke-making operations during the period the ammonia still lime sludge was generated. In October 1983, BSC discontinued its primary metal-making operations and modified its coking processes so that the ammonia still lime sludge was no longer generated. (BSC now uses sodium hydroxide as the strong base at the ammonia still rather than lime slurry, and therefore ammonia still lime sludge is no longer generated.)

BSC's steel-making process involved refining molten iron with oxygen, flux (*i.e.*, dolomite or lime), and alloying materials in a basic oxygen furnace to produce carbon steels. BSC's ironmaking process involved smelting of iron-bearing materials (i.e., iron ore, sinter, and scrap) with coke, flux (i.e., dolomite and lime), and preheated air in blast furnaces. The blast furnace slurry disposed of in BSC's landfill originated from the water scrubbing of blast furnace gas. According to BSC, blast furnace sludge has not been produced since the final removal of sludge from the thickener in November 1983.

Coke-making involves the destructive distillation of bituminous coal in coke ovens. Volatile matter evolves during the coking process (including the moisture content of the coal) and leaves the ovens through coke oven gas offtakes. This hot coke oven gas is cooled by spraying it with recycled flushing liquor consisting of a weak ammonia liquor (WAL) solution. As the coke oven gas is cooled, water and tar are condensed. The tar fraction is separated from the aqueous WAL in a decanter. The majority of the WAL is recycled back to the coke oven gas cooling process as flushing liquor. Any excess WAL is processed by solvent extraction to recover phenol or sodium phenolate. The excess WAL then is processed by steam stripping to release aqueous ammonia into the gas phase in an ammonia still. In the upper portion of

the still, free ammonia is stripped by steam (at temperatures of about 100 °C) and ammonia vapor rising from the lower portion. In the lower portion of the still, fixed ammonia compounds are dissociated by adjusting the pH with lime slurry and then injecting steam. The spent ammonia still lime slurry is drawn off the bottom and discharged to one of two settling basins. The sludge that settles out in these basins (*i.e.*, ammonia still lime sludge) is subsequently placed in the on-site landfill.

As stated previously, BSC disposed of its ammonia still lime sludge in its onsite HWM-2 landfill with other solid wastes between 1969 and November of 1983. BSC is not currently disposing of wastes in this landfill. Based on available records, BSC estimates that approximately two percent of the waste placed in the landfill is ammonia still lime sludge. The most significant wastes that were disposed of in the landfill include: blast furnace thickener sludge, basic oxygen furnace thickener sludge, sinter plant sludge, sludges generated from the treatment of wastewaters from a cold rolling mill, a steel pickling operation, and a hot-dip galvanizing line, and dredging spoils (from Smokes Creek). Only the ammonia still lime sludge is a listed hazardous waste.

BSC's preliminary sampling demonstration included data on ten samples collected from the landfill in January 1984. A detailed description of procedures used to collect three of these samples was not provided and is not available. For the remaining seven samples, BSC divided the landfill into four sections and randomly selected a partial core sample (i.e., two-foot core samples were taken as opposed to fulldepth core samples) from each of the four sections, two partial core samples from the central portion of the landfill, and an additional partial core sample from the southeast section. A grab sample was then taken from each of these seven core samples, resulting in seven grab samples. The three samples for which sampling procedure descriptions were not provided were analyzed for total constituent (i.e., mass of a particular constituent per mass of waste) and extraction procedure (EP) leachable (i.e., mass of a particular constituent per unit volume of extract) concentrations of arsenic, cyanide, naphthalene, and phenolic compounds. The extraction procedure used in these analyses, however, was not equivalent with the procedure described in SW-846 Method 1310 and therefore these data were not considered in the evaluation of BSC's petition. (For a more detailed description of the extraction

procedure used by BSC, see the RCRA public docket for today's notice.) The remaining seven grab samples were analyzed (using the EP) for leachable concentrations of the eight TC metals, nickel, cyanide, and sulfide; and the characteristics of corrosivity and reactivity.

BSC collected a second set of samples during April 1984. To collect these samples, BSC divided the landfill into six sections of approximately equal size. Within each section, six discrete samples were taken at random depths from evenly spaced boring locations. The samples then were composited, by section, to form six representative samples, one composite per section. These six composite samples were analyzed for total constituent concentrations of the eight TC metals, nickel, cyanide, benzene, benzo(a)pyrene, naphthalene, phenolic compounds, and tetrachloroethylene. In addition, these six composite samples were analyzed (using the EP) for leachable concentrations of the eight TC metals, nickel, and cyanide; total oil and grease content; and the characteristic of ignitability.

At EPA's request, BSC conducted additional sampling and testing of the central portion of the landfill in February of 1985. Specifically, BSC collected approximately ten two-foot long core samples from six locations within the central portion of the landfill. For each location, grab samples were taken from each of the core samples (approximately ten) and composited. These six composite samples were analyzed for total constituent and leachable concentrations (using the EP) of the eight TC metals (excluding mercury, selenium, and silver), nickel, and cyanide. In addition, these six composite samples were analyzed for total constituent concentrations of sulfide, benzene, benzo(k)fluoranthene, benzo(a)pyrene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, naphthalene, and phenolic compounds; and total oil and grease content.

In its comments to the Agency's April 7, 1989 proposed denial of its petition, BSC submitted the analytical results of an additional sampling event. In September 1988, four full-depth core samples were obtained from the landfill and were composited to form one composite sample. This sample was analyzed using the TCLP to quantify leachable concentrations of the TC contaminants listed in § 261.24 (excluding the pesticides/herbicides) and thirteen other organic constituents.

In June 1992, following the publication of the final denial notice for