BLACK & VEATCH Waste Science, Inc.

400 Northridge Road, Suite 350, Atlanta, Georgia 30350, (404) 594-2500, Fax: (404) 587-2930

#27620

US EPA -- Region IV
Site Inspection Prioritization
Work Assignment No. 12

BVWS Project 52012.506
October 13, 1995

Mr. Robert Jourdan
Chief, North Superfund Remedial Branch
U.S. Environmental Protection Agency
345 Courtland Street, NE
Atlanta, Georgia 30365

Subject: Final Site Inspection Prioritization
ALCOA SPDL Landfills
Alcoa, Blount County, TN
EPA ID No. TND980558597

Dear Mr. Jourdan:

Enclosed please find one copy of the Final Site Inspection Prioritization for ALCOA SPDL Landfills in Alcoa, Blount County, Tennessee. If you have any questions, please contact me at 404/643-2320.

Very truly yours,

BLACK & VEATCH Waste Science, Inc.

Felicia Williams-Moon for

Victor Blix
Project Manager

fw
Enclosures

cc: Doug Thompson, EPA PO, w/o enclosures
Deborah Davidson, EPA CO, w/o enclosures
Earl Bozeman, EPA WAM, w/o enclosures

BLACK & VEATCH Waste Science, Inc.

2300 Clayton Road, Suite 1280, Concord, California 94520-2100, (510) 246-8010, Fax: (510) 246-8082

U.S. Environmental Protection Agency
ALCOA SPDL Landfills
Work Assignment 12

BVWS Project 52012.506
April 26, 1995

Mr. Narindar Kumar, Chief
Site Assessment Section
U.S. Environmental Protection Agency
345 Courtland Street, NE
Atlanta, Georgia 30365

Subject: Site Inspection Prioritization
ALCOA SPDL Landfills
Alcoa, Blount County, Tennessee
EPA ID TND980558597

Dear Mr. Kumar:

BLACK & VEATCH Waste Science, Inc. has been tasked by the U.S. Environmental Protection Agency (EPA) to conduct a Site Inspection Prioritization for the Aluminum Company of America (ALCOA) SPDL Landfills (the site) in Alcoa, Blount County, Tennessee. In accordance with the scope of work, a preliminary Hazard Ranking System (HRS) score was prepared to determine the need for future activities at the site.

The inactive site is located on Springbrook Road approximately 0.7 mile east of Business Route 129, 15 miles south of Knoxville, and in the vicinity of the South Plant of ALCOA (Ref. 1). The ALCOA complex consists of three plants: the North Plant, the West Plant, and the South Plant. From 1964 through 1978, industrial wastes from the ALCOA plants were deposited into the landfills. Wastes included aluminum chloride, alumina, coke dust, cell lining bricks, cell drop-out box catch, clothing, and Dowtherm (a heat transfer fluid) (Refs. 2, p. 4; 3, p. 3; 4, p. 2). The wastes were placed in drums with perforated lids and placed in limestone lined trenches (Ref. 3, p. 4). It is unknown if the site held a permit as an industrial landfill (Ref. 2, p. 5).

The site consists of five landfills which have been designated as South Plant (SP) A, SPB, SPC, SPD, SPE, and SPF (Ref. 5, pp. 11, 15, 16). The sizes of the SPDL Landfills are: SPA - 160,000 square feet (sf), SPB - 45,000 sf, SPC - 47,812.5 sf, SPD - 87,500 sf,

SPE - 563,750 sf, and SPF - 829,500 sf respectively (Ref. 5, pp. 11, 15, 16). The approximate areas of the landfills were calculated from dimensions given in Figures 1-2, 3-3, and 3-4 (Ref. 5, pp. 11, 15, 16) Three of the SPDL Landfills, SPB, SPC, and SPE, are designated Tennessee State Superfund sites (Ref. 5, p. 1).

In October 1985, the Tennessee Department of Health and Environment sampled monitoring wells that are near the South Plant and the various landfills. A total of nine groundwater samples were collected. Samples were tested for priority pollutant metals. Analytical data from groundwater samples indicated the presence of lead, zinc, nickel, and chromium in concentrations significantly (greater than three times) above designated control samples (Ref. 6, pp. 4, 7).

In October 1994, ALCOA presented a summary of groundwater data that encompassed four quarterty monitoring events in 1993 and 1994 (Ref. 5, p. 1). A total of 14 groundwater samples were collected during those quarterly monitoring events and analyzed for constituents of the Target Compound List and the Target Analyte List (Ref. 5, p. 1). Analytical data from the groundwater samples indicated the presence of magnesium, acenaphthene, dibenzofuran, fluorene, naphthalene, benzene, 1,1,1-trichloroethane, and bis(2-ethylhexyl)phthalate in concentrations significantly (greater than three times) above the designated control sample (Ref. 5, pp. 6-9).

Potable water within a 4-mile radius of the site is supplied by municipal surface water (Ref. 2, p. 3). Based on municipal service boundaries, it is unlikely that there are any private drinking water wells within 4 miles of the site (Ref. 1). Karst features associated with the Maryville limestone, such as sinkholes, are found in proximity of the site (Ref. 3, pp. 9-10). The depth to groundwater beneath the site is approximately 20 to 40 feet below land surface (Ref. 4, p. 21).

Surface water runoff, although following different routes from each of the landfills, travels overland approximately 1,200 feet northeast to a wetland area located along the Springfield Branch of Pistol Creek (Ref. 1). Runoff travels approximately 600 feet east from the probable point of entry (PPE) through the wetland areas before entering the Springfield Branch of Pistol Creek. Runoff then flows approximately 3,500 feet north

before entering into Pistol Creek. Once in Pistol Creek, flow continues for approximately 3.1 miles northeast until it converges into the Little River. The surface water pathway continues for approximately 8.2 miles north before entering Fort Loudoun Lake/Tennessee River. The surface water flows southwest in the Tennessee River for the remainder of the 15-mile surface water pathway (Ref. 1).

Potable water within a 4-mile radius is supplied by several municipal systems: Knoxville Utilities, the City of Maryville, Alcoa Water Company, and South Blount Water System. These systems supply water to the cities of Alcoa, Maryville, and Knoxville. Knoxville Utilities operates one surface water intake located along the surface water pathway on Fort Loudoun Lake, approximately 12 miles downstream of the PPE (Refs. 1; 2; 8). This surface water intake supplies water to approximately 65,000 residential connections (approximately 123,150 persons) in Knoxville (Refs. 7; 8). The City of Maryville, Alcoa Water Company, and South Blount Water System supply water to populations within a 4-mile radius of the site; however, their surface water intakes are located upstream of the PPE (Refs. 9; 10; 11; 12).

The annual mean discharge of Fort Loudoun Lake for water year 1993 is between 145,900 and 183,400 cubic feet per second (Ref. 13). Approximately 0.8 mile of wetland areas were identified along the surface water pathway; the wetlands are located approximately 1,200 feet downstream of the PPE (Ref. 1). Pistol Creek is used for recreational fishing and Fort Loudoun Lake is fished commercially (Ref. 14). The 1993 fish catch on the Fort Loudoun Lake was 60,587 pounds (Ref. 12). Several federally endangered or threatened species may have ranges along the surface water bodies of the 15-mile surface water pathway; however, exact locations of these species have not been identified (Ref. 15).

There are approximately 38,534 residents within a 4-mile radius of the site (Refs. 1; 7; 16). The estimated population within the 4-mile radius is distributed as follows: 0 - 0.25 mile, 1,001 persons; 0.25 - 0.50 mile, 610 persons; 0.50 - 1 mile, 1,886 persons; 1 - 2 miles, 10,546 persons; 2 - 3 miles, 12,036 persons; 3 - 4 miles, 12,455 persons (Refs. 1; 7; 16). The nearest residence and school are located within 1,500 feet west of the site (Ref. 1). There are approximately 800 workers on the site (Ref. 2, p. 4). There are

approximately 62 acres of wetlands located within a 4-mile radius of the site (Ref. 1). Several federally endangered or threatened species may have ranges within a 4-mile radius of the site; however, exact locations of these species have not been identified (Ref. 15).

Due to low target values associated with all pathways evaluated, no further action is recommended at the ALCOA SPDL Landfills site. Attached are all references used during this evaluation.

If you have any questions or comments, please contact me at (510) 246-8010, or Victor Blix at (404) 643-2320.

Very Truly Yours,

BLACK & VEATCH Waste Science, Inc.

Christine Karas

Christine Karas
Site Geologist

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Enclosure

## REFERENCES


1. U.S. Geological Survey, 7.5 minute series Topographic Quadrangle Maps of Tennessee: Maryville 1979; Louisville 1968 (photorevised 1984); Binfield 1952 (photorevised 1990); Blockhouse 1966; scale 1:24,000.

2. U.S. Environmental Protection Agency, Site Inspection Report, ALCOA SPDL Landfills, Alcoa, Blount County, Tennessee, January 1987.

3. Law Environmental Services, Hazard Assessment Remedial Action Plan, South and West Plant Landfill Facilities for Aluminum Company of America, Alcoa, Tennessee, September 1986.

4. NUS Corporation, Site Screening Investigation Report, ALCOA SPDL Landfills and Powder and Pigment Landfills, Alcoa, Tennessee, Revision 1, February 1985.

5. Paul Platillero, ALCOA, letter to Beth Walker, Tennessee Department of Environment and Conservation, Division of Superfund, October 21, 1994. Subject: Groundwater monitoring program for South and West Plant Superfund sites, Alcoa-TN operations.

6. Tennessee Department of Health and Environment, Bureau of Laboratory Services, Report of Analyses, ALCOA South Plant, October 2, 1985.

7. U.S. Department of Commerce, Bureau of the Census, 1990 Census of Population and Housing: Summary Population and Housing Characteristics, Tennessee, 1990 CPH-1-44, August 1991.

8. Christine Karas, Site Geologist, BLACK & VEATCH Waste Science, Inc., telephone conversation with Joe Snyder, Knoxville Utilities, February 23, 1994. Subject: Population served by the surface water intake located at river mile 650.7.

9. Christine Karas, Site Geologist, BLACK & VEATCH Waste Science, Inc., telephone conversation with Ray Richardson, Alcoa Water Company, Main Office, January 19, 1995. Subject: Surface water intakes on the Little River.

10. Christine Karas, Site Geologist, BLACK & VEATCH Waste Science, Inc., telephone conversation with Jimmy Birchfield, Maryville Water Treatment Plant, January 19, 1995. Subject: Surface water intakes on the Little River.

11. South Blount Utility District, Water System Map, Expansion Program, No date.

12. Judy Rakestraw, Halliburton NUS Corporation, telephone conversation with Rowenna Huffster, South Blount Water System, April 7, 1994. Subject: South Blount Water System obtains their water from Alcoa Water Department.

13. U.S. Geological Survey, Water Resources Data Tennessee, Water Year 1993, March 1994.

14. Tennessee Wildlife Resources Agency, Fisheries Report, 94-14, Commercial Fishing Report 1993, 1993.

15. U.S. Fish and Wildlife Service, Endangered and Threatened Species of the Southeastern United States (The Red Book), January 1992.

16. U.S. Environmental Protection Agency, Graphical Exposure Modeling System (GEMS) Data Base. Compiled from U.S. Bureau of the Census data, 1983.