SITE ASSESSMENT DECISION - EPA REGION IV

Site Name: Reynolds Metals Co. River Road Plant **EPA ID#:** ALD000652693

Alias Sits Names:

City: Muscle Shoals **County or Parish:** Colbert **State:** AL

Refer to Report Dated: PA: _____ **SI:** _____ **Other (report type & date):** SIP 09/21/93

Report developed by: Dynamac Corporation

DECISION:

|x| **1. Further Action under Superfund (CERCLA) is not appropriate or required because:**

|x| 1a. Site Evaluation Accomplished (SEA). | | 1 b. Action Deferred to: | | RCRA | | NRC

| | **2. Further Investigation Needed Under Superfund:** 2a. Priority: | | Higher | | Lower

2b. Activity Type: | | PA | | SI | | ESI | | evaluate HRS score

| | Other: _____

DISCUSSION/RATIONALE: There are no targets present.

Report Reviewed and Approved by: Cynthia K. Gurley **Signature:** Cynthia Gurley **Date:** 09/21/93

Site Decision Made by: _____ **Signature:** _____ **Date:** _____

EPA Form # 9100-3

DATE REPORT ACCEPTED 9-21-93

DISTRICT SEA

SAM SIGNATURE Cynthia Gurley

TES VIII WORK ASSIGNMENT NO. C04119
SITE INSPECTION PRIORITIZATION
REYNOLDS METALS COMPANY RIVER ROAD PLANT
MUSCLE SHOALS, COLBERT COUNTY, ALABAMA
EPA ID NO. ALD000652693
WASTELAN NO. 0031

EPA REGION:	IV
CONTRACT NO.:	68-W9-0005; TES VIII
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DOCUMENT CONTROL NO. C04119-SIP-LC-243

Submitted to

U.S. ENVIRONMENTAL PROTECTION AGENCY

REGION IV

by

DYNAMAC CORPORATION

September 15, 1993

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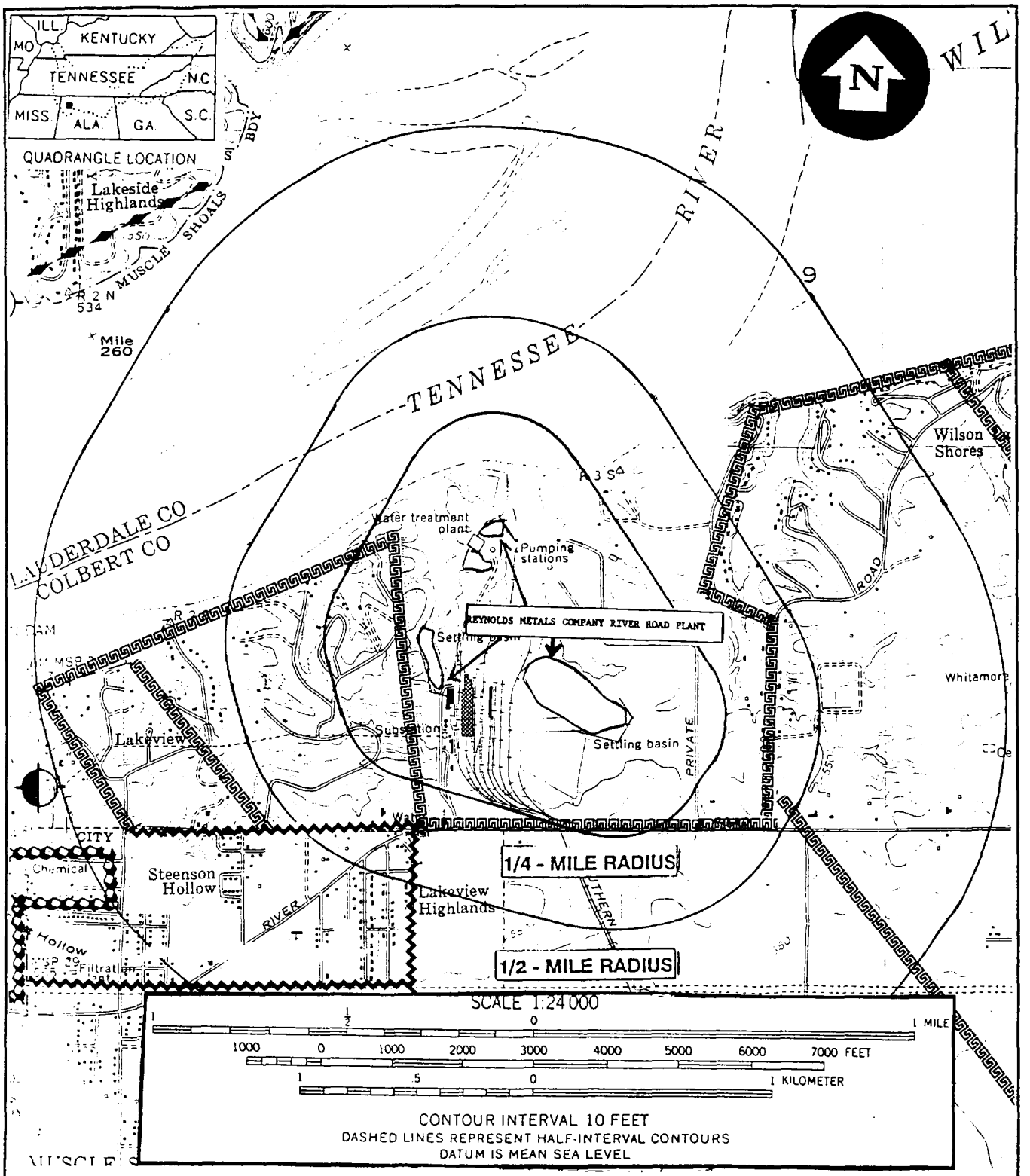
Introduction

Dynamac Corporation (Dynamac) has conducted this Site Inspection Prioritization (SIP) at the request of EPA Region IV under the Technical Enforcement Support (TES VIII) contract, Work Assignment No. C04119. The objective of this SIP has been to evaluate the characteristics of the site and surrounding areas in order to provide a recommendation concerning further activities at Reynolds Metals Company River Road Plant (Reynolds). In order to achieve this objective, Dynamac has gathered and assimilated all readily available existing information concerning this site and has either assembled or confirmed data concerning the population and environments in the vicinity of the site. Pertinent elements of the data gathered and evaluated are presented in the sections that follow. Any informational gaps in the data evaluated are also identified.

Site History and Description

Reynolds is located approximately 1 mile east of Muscle Shoals, Colbert County, Alabama, on River Road at 34° 47′ 37″ north latitude and 87° 36′ 00″ west longitude (see Figure 1) (Ref. 1). Reynolds comprises three surface impoundments and one wastewater treatment discharge pond. The largest of the surface impoundments occupies approximately 13.5 acres and is located about 750 feet east of the main plant buildings (see Figure 2). A second surface impoundment occupies approximately 2.6 acres and is located about 500 feet northwest of the main plant buildings. The third surface impoundment, which is 1.5 acres in size, is located just north of an abandoned wastewater treatment plant in the northern portion of the property, near Wilson Lake. The wastewater treatment discharge pond is adjacent to and west of the abandoned wastewater treatment plant (WWTP) (Refs. 1; 2, p. 22).

The normal annual total precipitation in the area is 52 inches, and the mean annual lake evaporation is 40 inches resulting in a net annual precipitation of 12 inches (Ref. 7, pp. 43, 63). The 2-year, 24-hour rainfall is approximately 4 inches (Ref. 8, p. 95).



Source: Base map is a portion of the USGS 7.5 Minute Series Topographic Quadrangle map of Killen, Alabama, 1971.

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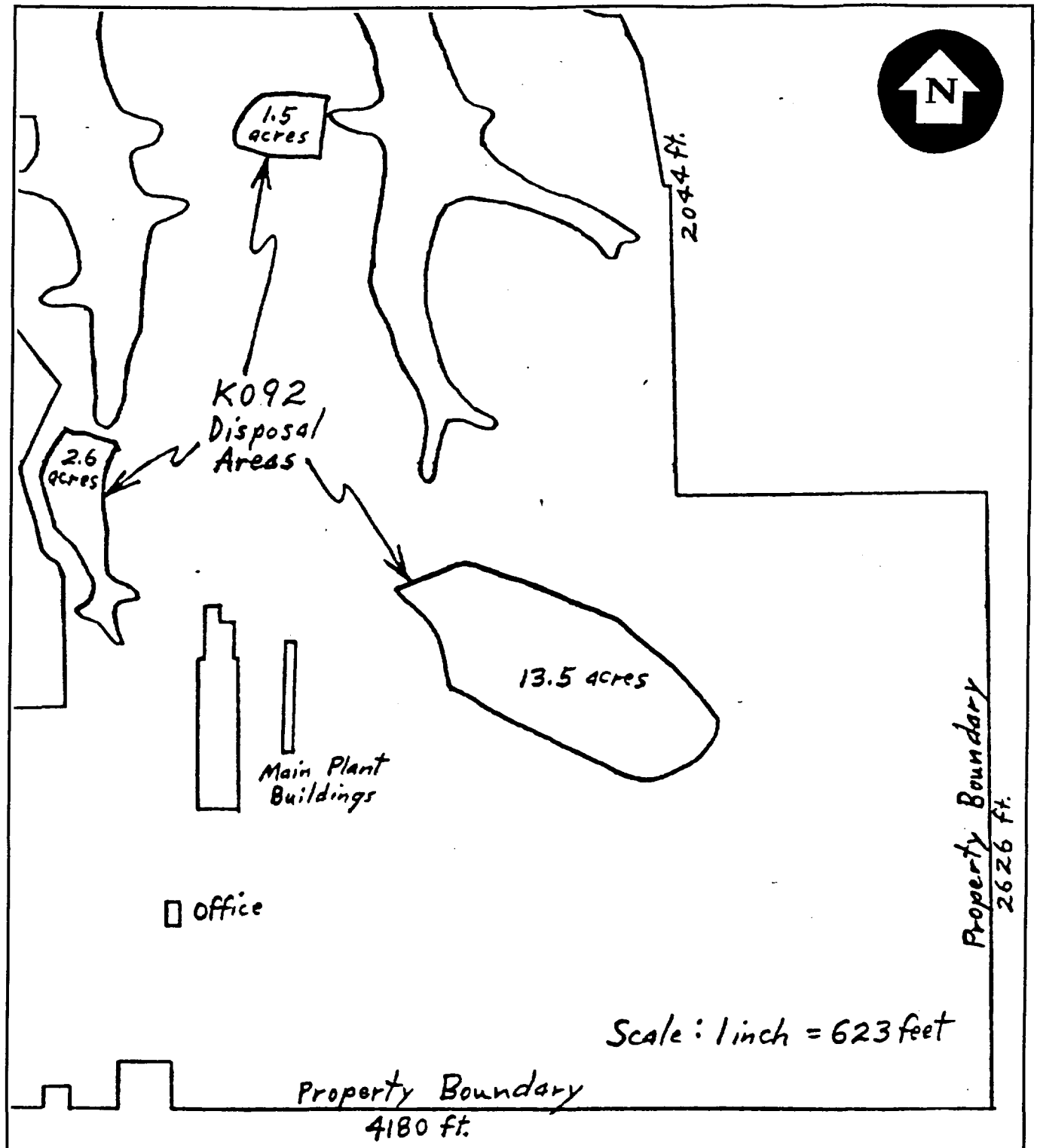
Environmental Services

Figure 1 : Site Location Map
REYNOLDS METALS COMPANY RIVER ROAD PLANT
Muscle Shoals, Colbert County, Alabama



Source: RCRA 3021 Site Inspection Report completed by Environmental Protection Systems, Inc., on behalf of Alabama Department of Environmental Management, March 1985.

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Environmental Services

Figure 2 : Site Layout Map

REYNOLDS METALS COMPANY RIVER ROAD PLANT

Muscle Shoals, Colbert County, Alabama

Union Carbide Corporation, Mining and Metals Division (Union Carbide), first began operations at the site in 1940 (Ref. 2, p. 3). Union Carbide manufactured ferrosilicon alloys in electric arc furnaces charged with silica gravel, scrap steel, wood chips, coal and coke (Refs. 3; 4). The gases emitted from the furnaces were washed in gas scrubbers to remove solids and cyanide. Wastewater from the scrubbing operation was treated onsite at a WWTP. Treatment included the destructive conversion of cyanide to cyanate compounds. The remainder of the wastewater was flocculated in a settling tank where solids were removed and disposed in the onsite sludge lagoons (previously identified in this SIP report as ponds) (Ref. 4, p. 2). Solids were settled in at least three ponds which Reynolds identified in a RCRA Part A application (Ref. 5, Form 3, Item V). The treated water was then pumped to polishing ponds for final settling and destruction of residual cyanide prior to discharge to Wilson Lake. It should be noted that prior to the use of the WWTP, partially treated wastewater was discharged directly into Wilson Lake by Union Carbide (Ref. 4).

Reynolds purchased the facility from Union Carbide in 1980, but did not initiate manufacturing until late 1984 (Ref. 6, p. 3). Currently Southern Reclamation is operating at the facility for its parent company, Reynolds Metals Company (Ref. 39).

Regulatory History and Exclusions

Reynolds filed a Resource Conservation and Recovery Act (RCRA) hazardous waste Part A permit application on November 17, 1980, for the surface impoundment disposal of EPA hazardous waste number K092 (emission control dust sludge from ferromanganese production) (Refs. 5; 9). The K092 waste was deleted from the RCRA-listed hazardous waste designation on January 16, 1981. As a result, Reynolds withdrew its RCRA hazardous waste Part A permit application for disposal (Ref. 9). In 1981, Reynolds submitted to EPA a Notification of Hazardous Waste Site (EPA Form 8900-1), which identified the source of waste as the manufacture of ferromanganese (Ref. 10). EPA determined the need for a site inspection (SI) in September 1982 (Ref. 11). On January 14, 1983, the Reynolds plant manager filed an EPA notification of hazardous waste activity (EPA Form 8700-12) (Ref. 12). Reynolds is not currently listed as a generator by the EPA RCRA Permitting Section (Ref. 30).

Summary of Previous Investigations

Environmental Protection Systems, Inc. (EPS) conducted a Preliminary Assessment (PA) and a RCRA 3012 SI for the Alabama Department of Environmental Management (ADEM). These investigations are presented in Table 1.

TABLE 1

REYNOLDS METALS COMPANY RIVER ROAD PLANT
MUSCLE SHOALS, COLBERT COUNTY, ALABAMA

Investigation Summary

DATE	AGENCY	EVENT	DESCRIPTION	REFERENCE(S)
09/26/84	EPS	Preliminary Assessment	File Review	9
01/15/85	EPS	RCRA 3012 Site Inspection	8 soil samples	2

EPS = Environmental Protection Systems, Inc.

Table 2 presents hazardous constituents detected at elevated levels in composite soil samples collected during the RCRA 3012 Site Inspection at Reynolds in January 1985. The concentration of an analyte is considered elevated if the concentration in the background/control sample is greater than or equal to three times the concentration in the background/control sample or greater than or equal to the Minimum Quantitation Limit (MQL) if not detected in the background/control sample. File material does not indicate if all parameters on the Target Compound List and Target Analyte List were analyzed for. Analytical data sheets which EPS provided indicate that analysis may have been for only cadmium, chromium, cyanide and lead.

TABLE 2

REYNOLDS METALS COMPANY RIVER ROAD PLANT
MUSCLE SHOALS, COLBERT COUNTY, ALABAMA
RCRA 3012 SITE INSPECTION
JANUARY 15, 1985

Summary of Soil Data

SAMPLE NUMBER	TYPE	LOCATION	RESULTS (mg/kg)		REFERENCE(S)
RE-S07-AS	Background Soil Sample	Collected from top of hill where there was no evidence of activity.	Cadmium Lead Cyanide	0.9 28.8 2.5	2, pp. 16, 26, 40
RE-S01-LA	Composite Soil Sample	1.5-acre disposal area north of water treatment plant.	Cadmium Lead	5.5 813.0	2, pp. 16, 25
RE-S02-LA	Composite Soil Sample	Discharge pond west of water treatment plant.	Cadmium Lead	5.5 541.0	2, pp. 16, 25
RE-S03-SB	Composite Soil Sample	Center of 13.5-acre settling basin.	Cadmium Lead Cyanide	7.1 1,230.0 7.9	2, pp. 16, 25
RE-S04-SB	Composite Soil Sample	Center of 13.5-acre settling basin, south of sample RE-S03-SB.	Cadmium Lead Cyanide	5.0 1,570.0 11.5	2, pp. 16, 25
RE-S05-LA	Composite Soil Sample	East side of 2.6-acre disposal area.	Cadmium Lead	5.2 2,170.0	2, pp. 16, 26
RE-S06-LA	Composite Soil Sample	Center of 2.6-acre disposal area.	Cadmium Lead Cyanide	4.7 2,250.0 8.4	2, pp. 16, 26
RE-S08-LA	Composite Soil Sample; replicate of sample RE-S08-LA	Within 2 feet of each composite sample of RE-S08-LA.	Cadmium Lead	5.5 1,052.0	2, pp. 16, 26

mg/kg = Milligrams per kilogram

No groundwater, ambient air or surface water samples were collected during the SI (Ref. 2, p. 16).

Sources and Waste Characteristics

According to the sample results from the SI which EPS conducted at Reynolds on January 15, 1985, three source areas have been identified: a 13.5-acre settling basin, a 2.6-acre disposal basin and a 1.5-acre area that includes a diked basin and a discharge pond located near an abandoned WWTP (Ref. 2, pp. 5-7, 16, exhibit 2.2). The 13-acre settling basin is diked to a level approximately 15 feet above the road surface (Ref. 2, p. 5). The discharge pond north of the wastewater

treatment plant is diked approximately 5 feet above the level of the fill material; the discharge pond west of the WWTP is apparently not diked (Ref. 2, pp. 5, 6). The 2.6-acre disposal basin is fenced with three gates. There is diking at this disposal basin, but available file material does not indicate the level of the dikes (Ref. 2, p. 7). Lead, cadmium and cyanide were detected in soil samples collected from onsite (Ref. 2, pp. 16, 25, 26, 40).

Groundwater Migration Pathway

Reynolds is located in the Interior Low Plateaus physiographic province in Muscle Shoals, Colbert County, Alabama (Ref. 13, pp. 7-9). The Interior Low Plateaus physiographic province is characterized by gently rolling to virtually level topography. The area is underlain by Mississippian-age rocks near ground surface. These rocks consist primarily of limestone, which in some places contain extensive chert beds and are susceptible to dissolution by chemical weathering (Ref. 14, p. 13). Elevations within a 4-mile radius of the Reynolds range from approximately 470 to 650 feet above mean sea level (msl). Reynolds is located at an elevation of approximately 480 feet above msl (Ref. 1).

Regional stratigraphy is characterized by a regolith composed of unconsolidated clay, sand and gravel overlying alternating units of limestone (Ref. 14, pp. 40-43). Geologic units which underlie the area include, in descending stratigraphic order: residuum formed by the insitu weathering of the Tuscumbia Limestone, the Tuscumbia Limestone and the Fort Payne Chert (Refs. 14, pp. 40-43; 15, p. 8). Quaternary alluvial deposits may be present in stream beds within a 4-mile radius of the facility. The residuum comprises unstratified clay with beds and lenses of sand and gravel. The residuum ranges in thickness from approximately 0 to 100 feet, thickening toward the northeast (Ref. 15, pp. 7, 10). The underlying Tuscumbia Limestone consists of bedded crystalline limestone with chert nodules. The Tuscumbia Limestone has a maximum thickness of 200 feet in Colbert County (Ref. 15, p. 10). The Fort Payne Chert consists of siliceous limestone with abundant beds of nodular chert and underlies the Tuscumbia Limestone. The Fort Payne Chert has an average thickness of 190 feet (Refs. 14, pp. 40-43; 15, pp. 7, 10).

Groundwater occurs in the mantle of residuum and in solution openings along fractures and bedding planes in the Tuscumbia Limestone and the Fort Payne Chert (Ref. 14, pp. 40-43). The residuum does not yield large quantities of water due to its clayey nature, and water quality is generally poor (Ref. 15, p. 14). The Tuscumbia Limestone and the Fort Payne Chert are considered to be one aquifer, called the Tuscumbia-Fort Payne aquifer (Ref. 14, p. 43). Test-drilling and pumping test data indicate the existence of extensive solution openings in the

Tuscumbia Limestone and Fort Payne Chert near Muscle Shoals (Refs. 14, pp. 40-43; 15, pp. 7, 10). Based upon the soluble nature of the geologic units beneath Reynolds, karstic groundwater flow occurs in the area of the site. Solution openings in the Fort Payne Chert are particularly well developed where the overlying Tuscumbia Limestone is less than 200 feet thick (Ref. 15, p. 43). However, surficial expression of bedrock collapses from dissolution, such as sinkholes and other solutional features, are not present in the area (Ref. 1). Groundwater in the Tuscumbia-Fort Payne aquifer is generally of good chemical quality (Ref. 14, p. 43). Recharge to the aquifer is through the infiltration of precipitation through the residuum, into the aquifer (Ref. 15, p. 14).

According to the Colbert County Health Department, very few residents within the 4-mile radius of Reynolds use private wells as a drinking water supply (Ref. 16). A door-to-door survey would be necessary to find private well users.

Surface Water Migration Pathway

Surface water runoff flows from Reynolds approximately 200 feet overland from the 1.5-acre area that includes a diked basin and a discharge pond, before entering the Tennessee River. Soil types affecting runoff from Reynolds include the Dewey loam soil type (Ref. 29). The upper 4 to 6 inches of this soil type consist of a reddish-brown or brown mellow and friable loam which contains a large quantity of silt, some fine sand and clay. This is underlain by a 1- to 3-inch subsurface layer of reddish-brown clay loam. The subsoil is a reddish-brown silty clay loam or clay which extends to a depth ranging from 3 to 12 feet (Ref. 29, p. 14). Reynolds is located in an area of minimal flooding (Ref. 28). Wilson Dam is approximately 1-mile downstream from Reynolds and creates the backwaters of Wilson Lake. Pickwick Lake is the next lake downstream of Wilson Dam on the Tennessee River. The Tennessee River comprises the entire 15-mile surface water migration pathway (Ref. 1). The average flow rate of the Tennessee River was recorded over a period of 96 years averaging 51,680 cubic feet per second (cfs) gauged at Florence, Alabama, approximately 4-miles downstream from Reynolds (Ref. 27).

Almost the entire population within the 4-mile radius of Reynolds uses drinking water provided by municipal suppliers. Muscle Shoals Water Department serves approximately 7,000 connections with water drawn from a surface water intake located south of Wilson Dam and approximately 1.25 mile downstream from Reynolds at river-mile 259.5 (Refs. 1; 19). The Muscle Shoals service area includes Muscle Shoals, portions of the Colbert County Water System and the Spring Valley Water Department (Refs. 19; 26; 31). Using the 1990 U.S. Bureau of the Census

data of 2.56 persons-per-household for Colbert County, the estimated population in this service area is approximately 17,920 persons.

The Florence Water Department supplies 18,250 connections with water drawn from two surface water intakes. One intake is located across Wilson Lake from the Muscle Shoals intake at river-mile 259.5; the second intake is located on Cypress Creek and would not be influenced by runoff from Reynolds. The Florence Water Department service area also includes East Lauderdale, West Lauderdale and Chisolm Heights (Refs. 1; 20). Chisolm Heights serves approximately 720 connections, West Lauderdale serves approximately 2,509 connections, and East Lauderdale serves approximately 1,700 connections (Ref. 33, 34, 35; 38). The town of Killen also receives a portion of water from the Florence Water Department; however, the amount is not known (Refs. 36; 37).

Using the above information, the population using water from Florence Water Department is as follows:

Water Department	Connections	Population*
Florence Water Department	18,250	46,173
Chisolm Heights	720	1,822
West Lauderdale	2,509	6.348
East Lauderdale	1,700	4,301
	Total 23,179	Total 58,644

* Population = Connections x 2.53 persons per household (Ref. 38).

The Sheffield Water Department supplies approximately 4,500 connections with water drawn from an intake located approximately 6.5 miles downstream from Reynolds at river-mile 254 (Refs. 1; 21; 32). The Sheffield Water Department sells water to portions of the Colbert County Water Department which supplies a rural system of 1,000 connections in the western portion of Colbert County. Using the 1990 U.S. Bureau of the Census data of 2.56 per household for Colbert County, this is approximately 14,080 persons (Refs. 22; 26).

The Tennessee Valley Authority (TVA) draws water from one intake located approximately 1,500 feet downstream from the Muscle Shoals intake on Wilson Lake at river-mile 259.5. The TVA system supplies the 800 workers that are present at National Fertilizer Development Center within the TVA reservation (Ref. 23).

There are no other known surface water intakes located along the 15-mile surface water migration pathway from the site. The Tennessee River downstream from Sevenmile Island supports recreational activities (Ref. 24).

The TVA-owned Sevenmile Island Wildlife Management Area (SIWMA) is located approximately 8 miles downstream from Reynolds (Ref. 1). SIWMA is used as a game and fishery reserve. Bald eagles are frequently seen on Sevenmile Island (Ref. 17). State-designated endangered or threatened species which may be present in the Tennessee River include the orange-footed pimpleback mussel (Plethobasus cooperianus), the pink mucket pearly mussel (Lampsilis obiculata) and the rough pigtoe pearly mussel (Pleurobema plenum) (Ref. 18).

Air Migration and Soil Exposure Pathways

Selected demographic information presented below was collected to evaluate the air migration and soil exposure pathways. Possible impacts of airborne contamination were assessed using residential population, workers, schools and sensitive environments within 4 miles of Reynolds. Similarly, potential effects of exposure to surficial contamination at Reynolds were evaluated using accessibility of Reynolds and human and environmental populations onsite and within a 1-mile travel distance.

Access to the source areas, which are completely located on the Reynolds property, is limited by a fence that surrounds the property. The only means of access to plant areas is via entrance/exit gates located along River Road (Ref. 2, p. 2). Southern Reclamation, which currently operates at Reynolds, employs approximately 51 to 100 people (Ref. 39). There are only approximately 120 acres of wetlands located within 4 miles of Reynolds (Ref. 1). The Tennessee River, located adjacent to Reynolds, is a habitat for several endangered or threatened species in the State of Alabama (Ref. 18).

Population for the air migration pathway was based on a house count from United States Geological Survey topographic maps of the area and the Graphical Exposure Modeling System (GEMS) data base (Ref. 25). The 1990 U.S. Bureau of the Census county conversion factor of 2.56 people per household for Colbert County was used to estimate the population within 1 mile of Reynolds (Ref. 26). The population within 4 miles of the site was estimated as follows:

Radial Distance	Households		Population
0 - 0.25 mile	9		23[a]
0.25 - 0.50 mile	46		118[a]
0.50 - 1 mile	195		499[a]
1 - 2 miles	—		4,688[b]
2 - 3 miles	—		10,103[b]
3 - 4 miles	—		4,952[b]
		Total	20,383

[a] Population = households x 2.56 people per household
[b] Population obtained from GEMS data base.

Conclusion/Recommendations

Cadmium, lead and cyanide were detected in soil samples collected from former pond areas at Reynolds. The high dilution of the Tennessee River makes it unlikely that Reynolds would pose a threat to the surface water intakes or fisheries that are located downstream. Therefore, based on the presence of minimal populations in all pathways and no documented observed releases to groundwater, surface water or ambient air as presented in the available file material, it is recommended that the site evaluation be considered accomplished.

References

1. U.S. Geological Survey, 7.5 minute series Topographic Quadrangle Maps of Alabama: Tuscumbia 1971, Killen 1971, Florence 1971, Leighton 1971 scale 1:24,000.

2. RCRA 3012 Site Inspection Report for Reynolds Metals Company, Muscle Shoals, Alabama, presented by Environmental Protection Systems, Inc., to Alabama Department of Environmental Management, Project No. 1.84.174.01 (March 1985).

3. John M. Bolton, Assistant Director, Technical Staff, Alabama Water Improvement Commission, letter to Mr. Gregg Fawkes, Center for Study of Responsive Law, July 13, 1971. Subject: Quality of pollution control at the Union Carbide facility.

4. Summary of Pollution Abatement Plan, Submitted by Union Carbide Corporation, Mining and Metals Division, Sheffield, Alabama.

5. EPA Hazardous Waste Permit Application (EPA Form 3510-1) for Reynolds Metals Company, River Road Plant, Muscle Shoals, Alabama. Filed by Harry V. Helton, Vice President Corporate Operations Services, November 17, 1980.

6. Charles R. Bent, P.E., Environmental Engineer, Environmental Control Department, Reynolds Aluminum, letter with attachment to Mr. Stephen C. Maurer, RCRA 3012 Program Manager, Land Division, Alabama Department of Environmental Management, May 13, 1985. Subject: Southern Reclamation Company, RCRA 3012 Site Inspection Report.

7. U.S. Department of Commerce, Climatic Atlas of the United States (Washington D.C.: GPO, June 1968). Reprint: 1983, National Oceanic and Atmospheric Administration, excerpt, 4 pages.

8. U.S. Department of Commerce, Rainfall Frequency Atlas of the United States, Technical Paper Number 40 (Washington, D.C.: GPO, 1961), excerpt, 3 pages.

9. Potential Hazardous Waste Site Preliminary Assessment (EPA Form 2070-12) for Reynolds Metal Company, River Road Plant. Filed by Donalea Dinsmore, Environmental Protection Services, September 26, 1984.

10. EPA Notification of Hazardous Waste Site (EPA Form 8900-1) for Reynolds Metal Company, River Road Plant, Muscle Shoals Alabama. Filed by Charles Bent, Environmental Engineer, received June 9, 1981.

11. Potential Hazardous Waste Site Identification and Preliminary Assessment (EPA Form 2070-2) for Reynolds Metal Company, River Road Plant. Filed by Charles Bent, Environmental Engineer, September 11, 1982.

12. EPA Notification of Hazardous Waste Activity (EPA Form 8700-12) for Reynolds Metal Company, River Road Plant, Muscle Shoals, Alabama. Filed by W. D. Pipes, Plant Manager, January 14, 1993.

13. James A. Drahouzel, "Physiology of Alabama," Geology of the Alabama Coastal Plain, A Guidebook, Circular 47 (University, Alabama: Geological Survey of Alabama, 1968), excerpt, 5 pages.

14. Stanley J. Wentz, Robert M. Baker, and Blakeney Gillett, Drought-Related Impacts on Water Uses in North Alabama, Circular 127B (University, Alabama: Geological Survey of Alabama, May 1986), excerpt, 17 pages.

15. C. R. Bossong and Wiley F. Harris, Geohydrology and Susceptibility of Major Aquifers to Surface Contamination in Alabama; Area 1, Water-Resources Investigations Report 87-4068 (Tuscaloosa, Alabama: U.S. Geological Survey, 1987), excerpt, 11 pages.

16. Don Simmons, Environmental Health Director, Colbert County Department, telephone conversation with Mitch Cohen, Environmental Engineer, Dynamac Corporation, April 2, 1993. Subject: Number of private wells within the study area.

17. David Hayden, Assistant Chief of Wildlife, Alabama Department of Fish and Wildlife, telephone conversation with Betty Ann Pruner, Environmental Scientist, Dynamac Corporation, March 16, 1992. Subject: Sevenmile Island Wildlife Management Area.

18. U.S. Fish and Wildlife Service, Endangered and Threatened Species of the Southeastern United States,(Atlanta, Georgia, 1991), excerpt, 5 pages.

19. Roger Burcham, Manager, Muscle Shoals Water Department, telephone conversation with Mitch Cohen, Environmental Engineer, Dynamac Corporation, February 2, 1993. Subject: Water intakes and distribution for the Muscle Shoals Water Department.

20. Mike Doyle, Superintendent, Florence Water Department, telephone conversation with Mitch Cohen, Environmental Engineer, Dynamac Corporation, February 3, 1993. Subject: Water intakes and distribution for the Florence Water Department.

21. Lewis Moore, Manager, Sheffield Public Utilities, Water Department, telephone conversation with Mitch Cohen, Environmental Engineer, Dynamac Corporation, February 2, 1993. Subject: Water intakes and distribution for the Sheffield Water Department.

22. Mr. Bolton, Superintendent, Sheffield Water Department, telephone conversation with Betty Ann Pruner, Environmental Scientist, Dynamac Corporation, January 29, 1992. Subject: Water intakes and distributions for the Sheffield Water Department.

23. Louis Frederick, Manager, Tennessee Valley Authority, Wilson Hydroelectric Plant, telephone conversation with Mitch Cohen, Environmental Engineer, Dynamac Corporation, April 2, 1993. Subject: Water intake and distribution for the TVA Water System.

24. Lynn Fisk, Environmental Engineer, Water Quality Branch, Alabama Department of Environmental Management, telephone conversation with Betty Ann Pruner, Environmental Scientist, Dynamac Corporation, March 16, 1992. Subject: Designated use of the Tennessee River downstream of Sevenmile Island to Alabama - Tennessee State line.

25. U.S. Environmental Protection Agency, Graphical Exposure Modeling System (GEMS) Data Base, compiled from U.S. Bureau of the Census data (1980).

26. U.S. Department of Commerce, Proof Copy of table generated for 1990 CPH-1: Summary Population and Housing Characteristics, issued by Bureau of the Census (April 1991), excerpt.

27. U.S. Geological Survey, Water-Resources Data - Alabama, Water Year 1990, Water-Data Report AL-90-1, Tuscaloosa, Alabama, 1991.

28. Federal Emergency Management Agency, Flood Insurance Rate Map, Colbert County, Alabama, Panel 125 of 500, June 15, 1981.

29. U.S. Department of Agriculture Bureau of Chemistry and Soils, Soil Survey of Colbert County, Alabama (February 1939), excerpt, 3 pages and 1 map.

30. Pat Anderson, Hydrogeologist, EPA RCRA Permitting Section, telephone conversation with Deborah Kristiansen, Environmental Specialist, Dynamac Corporation, September 8, 1993. Subject: RCRA status of Reynolds Metals Company River Road Plant.

31. Roger Burcham, Manager, The Utilities Board, City of Muscle Shoals, letter with attachments to Mitch Cohen, Dynamac Corporation, February 11, 1993. Subject: Drinking water supply district for the Muscle Shoals service area.

32. Mr. Bolton, Sheffield Water Department, telephone conversation with David C. Smith, Dynamac Corporation, July 9, 1993. Subject: Water intakes and connections.

33. Anita Watkins, Meter/Reader/Billing and Collection Agency, Chisolm Heights Water System, telephone conversation with David C. Smith, Dynamac Corporation, July 15, 1993. Subject: Number of connections.

34. Kenneth Murphy, Manager Supervisor, West Lauderdale Water Department, telephone conversation with Betty Ann Pruner, Dynamac Corporation, July 29, 1993. Subject: Number of connections.

35. Robbie Green, Office Manager, East Lauderdale Water Department, telephone conversation with David C. Smith, Dynamac Corporation, July 15, 1993. Subject: Number of connections.

36. Joanne Armstead, Administrative Assistant, Florence Water Department, telephone conversation with David C. Smith, Dynamac Corporation, July 29, 1993. Subject: Water supply for the town of Killen.

37. Mike Doyle, Superintendent of Treatment Plants, Florence Water Department, telephone conversation with Betty Ann Pruner, Dynamac Corporation, August 4, 1993. Subject: Killen Water System and location of intakes for the Florence Water Department.

38. Mike Doyle, Superintendent of Treatment Plants, Florence Water Department, telephone conversation with David C. Smith, Dynamac Corporation, July 14, 1993. Subject: Water intakes and distribution of the Florence Water Department.

39. Steve Tucker, Bookkeeper, Chamber of Commerce of the Shoals, telephone conversation with Cindy Treadway, Dynamac Corporation, September 14, 1993. Subject: Operating status of Union Carbide.

CERCLA Eligibility Form

Site Name: Reynolds Metals Company River Road Plant

City/County/State: Muscle Shoals, Colbert County, Alabama

EPA ID Number: ALD000652693

Type of Facility: Generator ✓ Transporter ___ Disposal ___
Treatment ___ Storage (more than 90 days) ___

	Yes	No
Has this facility treated, stored or disposed of a RCRA hazardous waste since Nov. 19, 1980?	✓	___
Has a RCRA Facility Assessment (FA) been performed on this site?	___	✓
Does the facility have a RCRA operating or post-closure permit? If so, date issued	___	✓
Did the facility file a RCRA Part A application?	✓	___
If so:		
1) Does the facility currently have interim status?	___	✓
2) Did the facility withdraw its interim status?	✓	___
3) Is the facility a known or possible protective filer?	✓	___
Is the facility a late (after Nov. 19, 1980) or non-filer that has been identified by EPA or the State?	___	✓
Is the site a Federal Facility?	___	✓
Is there at least one source onsite which is not covered by CERCLA Petroleum Exclusion Legislation?	✓	___
Is the facility owned by an entity that has filed for bankruptcy under federal or State laws?	___	✓
Has the facility lost authorization to operate or had its interim status revoked?	___	✓
Has the facility been involved in any other RCRA enforcement action?	___	✓

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HAZARD RANKING SYSTEM PRELIMINARY SCORE FOR REYNOLDS METALS COMPANY RIVER ROAD PLANT MUSCLE SHOALS, COLBERT COUNTY, ALABAMA EPA ID NO. ALD000652693 WASTELAN NO. 0031

Pathways evaluated using the Site Inspection (SI) Worksheets were groundwater, surface water, soil exposure and air.

S_{gw} = 0.00
S_{sw} = 1.16
S_{se} = 1.10
S_{air} = 0.60

OVERALL SCORE 0.85

Sources and Waste Quantity

Sources at this site were determined to be three dry surface impoundments of varying sizes (13.5 acres, 2.6 acres and 1.5 acres). Composite soil samples were collected from each impoundment. Elevated levels of hazardous constituents were detected that include cyanide, lead and cadmium. The concentration of an analyte is considered elevated if the concentration is greater than or equal to three times the concentration in the background or control sample or greater than or equal to the Minimum Quantitation Limit (MQL) if not detected in the background/control sample. A hazardous waste quantity (HWQ) of 100 was used to score this site; this HWQ was based on the total acreage of the three surface impoundments. Two of the three surface impoundments are diked. Available file material does not indicate the current integrity of the dikes.

Groundwater Migration Pathway

The preliminary score for the groundwater pathway was limited by the lack of targets in the area of the facility. Also, there has been no analysis of groundwater samples. Almost the entire population within the 4-mile radius of the site uses municipal suppliers to obtain drinking water. The municipal utilities draw their water from the Tennessee River. There are a few wells within the area; however, their exact locations are not known. A door-to-door survey would be required to determine the exact locations of private wells in the area.

Surface Water Migration Pathway

The preliminary score for the surface water pathway was influenced by the presence of drinking water intakes located on the Tennessee River. There are four drinking water intakes located along the 15-mile surface water migration pathway on the Tennessee River (10,000 to 100,000 cubic feet

per second). The four surface water intakes service approximately 38,307 people. The Tennessee River is designated as a recreation area as far as 8 miles downstream from the facility. No on- or offsite surface water or sediment samples were collected along the migration pathway during the SI conducted by EPS.

The toxicity/persistence value of lead and cadmium is 10,000, and both were detected at elevated levels in soil samples collected from all three impoundments. These surface impoundments are located in an area of minimal flooding. Should a release occur to the Tennessee River, which is a fishery, the toxicity/persistence/bioaccumulation factors for lead, cadmium and cyanide would not be high enough to make the site score.

Due to the distance to the surface water intakes and the high dilution of the Tennessee River, it is unlikely that Reynolds Metals Company River Road Plant poses a threat to the intakes.

Soil Exposure Pathway

Analyses of composite soil samples collected from the three dry surface impoundments at the site indicated elevated levels of hazardous constituents including cyanide, lead and cadmium. The soil exposure pathway score was limited as no resident population was identified. The site is fenced, thus limiting site access.

Air Migration Pathway

No air samples were collected during the investigation of this site. The air migration pathway score was limited due to minimal targets within the 4-mile radius of the site. The nearest resident is approximately a quarter mile from sources at the site.

Conclusion/Recommendation

Cadmium, lead and cyanide were detected in soil samples collected from former pond areas at Reynolds. The high dilution of the Tennessee River makes it unlikely that Reynolds would pose a threat to the surface water intakes or fisheries that are located downstream. Therefore, based on the presence of minimal populations in all pathways and no documented observed releases to groundwater, surface water or ambient air as presented in the available file material, it is recommended that the site evaluation be considered accomplished.

Site Name: Reynolds Metals Company River Road Plant **DRAFT**
Location: Muscle Shoals, Colbert County, Alabama

GROUND WATER MIGRATION PATHWAY SCORESHEET

Factor Categories and Factors

	Likelihood of Release to an Aquifer	Maximum Value	Value Assigned	
1.	Observed Release	550	0	
2.	Potential to Release			
	2a. Containment	10	-	
	2b. Net Precipitation	10	-	
	2c. Depth to Aquifer	5	-	
	2d. Travel Time	35	-	
	2e. Potential to Release [lines 2a x (2b + 2c + 2d)]	500	500*	
3.	Likelihood of Release (higher of lines 1 and 2e)	550		500*
	Waste Characteristics			
4.	Toxicity/Mobility	[a]	10,000	
5.	Hazardous Waste Quantity	[a]	100	
6.	Waste Characteristics	100		32
	Targets			
7.	Nearest Well	50	0	
8.	Population			
	8a. Level I Concentrations	[b]	0	
	8b. Level II Concentrations	[b]	0	
	8c. Potential Contamination	[b]	0	
	8d. Population (lines 8a + 8b + 8c)	[b]	0	
9.	Resources	5	0	
10.	Wellhead Protection Area	20	0	
11.	Targets (lines 7 + 8d + 9 + 10)	[b]		0
	Ground Water Migration Score for an Aquifer			
12.	Aquifer Score [(lines 3 x 6 x 11)/82,500][c]	100		0
	Ground Water Migration Pathway Score			
13.	Pathway Score (S_{gw}), (highest value from line 12 for all aquifers evaluated)[c]	100		0

[a] Maximum value applies to waste characteristics category.
[b] Maximum value not applicable.
[c] Do not round to nearest integer.
- Not evaluated.
* Default value.

Site Name: Reynolds Metals Company River Road Plant **DRAFT**
Location: Muscle Shoals, Colbert County, Alabama

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET

Factor Categories and Factors	Maximum Value	Value Assigned	
DRINKING WATER THREAT			
Likelihood of Release			
1. Observed Release	550	0	
2. Potential to Release by Overland Flow			
2a. Containment	10	-	
2b. Runoff	25	-	
2c. Distance to Surface Water	25	-	
2d. Potential to Release by Overland Flow (lines 2a x [2b + 2c])	500	-	
3. Potential to Release by Flood			
3a. Containment (Flood)	10	-	
3b. Flood Frequency	50	-	
3c. Potential to Release by Flood (lines 3a x 3b)	500	-	
4. Potential to Release (lines 2d + 3c, subject to a maximum of 500)	500	500*	
5. Likelihood of Release (higher of lines 1 and 4)	550		500*
Waste Characteristics			
6. Toxicity/Persistence	a	10,000	
7. Hazardous Waste Quantity	a	100	
8. Waste Characteristics	100		32
Targets			
9. Nearest Intake	50	0	
10. Population			
10a. Level I Concentrations	b	0	
10b. Level II Concentrations	b	0	
10c. Potential Contamination	b	1	
10d. Population (lines 10a + 10b + 10c)	b	0	
11. Resources	5	5	
12. Targets (lines 9 + 10d + 11)	b		6

Site Name: Reynolds Metals Company River Road Plant **DRAFT**
Location: Muscle Shoals, Colbert County, Alabama

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET, Continued

Factor Categories and Factors	Maximum Value	Value Assigned	
DRINKING WATER THREAT (Concluded)			
Drinking Water Threat Score			
13. Drinking Water Threat Score ([lines 5 x 8 x 12]/82,500, subject to a maximum of 100)	100		1.16
HUMAN FOOD CHAIN THREAT			
Likelihood of Release			
14. Likelihood of Release (same value as line 5)	550		500*
Waste Characteristics			
15. Toxicity/Persistence/Bioaccumulation	a	$5x10^7$	
16. Hazardous Waste Quantity	a	100	
17. Waste Characteristics	1,000		180
Targets			
18. Food Chain Individual	50	0	
19. Population			
19a. Level I Concentrations	b	0	
19b. Level II Concentrations	b	0	
19c. Potential Human Food Chain Contamination	b	0	
19d. Population (lines 19a + 19b + 19c)	b	0	
20. Targets (lines 18 + 19d)	b		0
Human Food Chain Threat Score			
21. Human Food Chain Threat Score ([lines 14 x 17 x 20]/82,500, subject to a maximum of 100)	100		0
ENVIRONMENTAL THREAT			
Likelihood of Release			
22. Likelihood of Release (same value as line 5)	550		500*

Site Name: Reynolds Metals Company River Road Plant **DRAFT**
Location: Muscle Shoals, Colbert County, Alabama

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET, Concluded

Factor Categories and Factors	Maximum Value	Value Assigned	
ENVIRONMENTAL THREAT (Concluded)			
Waste Characteristics			
23. Ecosystem Toxicity/Persistence/ Bioaccumulation	[a]	$5x10^6$	
24. Hazardous Waste Quantity	[a]	100	
25. Waste Characteristics	1,000		100
Targets			
26. Sensitive Environments			
26a. Level I Concentrations	[b]	0	
26b. Level II Concentrations	[b]	0	
26c. Potential Contamination	[b]	0.0015	
26d. Sensitive Environments (lines 26a + 26b + 26c)	[b]	0.0015	
27. Targets (value from line 26d)	[b]		0
Environmental Threat Score			
28. Environmental Threat Score ([lines 22 x 25 x 27]/82,500, subject to a maximum of 60)	60		0
SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORE FOR A WATERSHED			
29. Watershed Score[c] (lines 13 + 21 + 28, subject to a maximum of 100)	100		1.16
SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORE			
30. Component Score (S_{of})[c] (highest score from line 29 for all watersheds evaluated, subject to a maximum of 100)	100		1.16

[a] Maximum value applies to waste characteristics category.
[b] Maximum value not applicable.
[c] Do not round to nearest integer.
\- Not evaluated.
* Default value.

Site Name: Reynolds Metals Company River Road Plant **DRAFT**
Location: Muscle Shoals, Colbert County, Alabama

SOIL EXPOSURE PATHWAY SCORESHEET

Factor Categories and Factors	Maximum Value	Value Assigned	
RESIDENT POPULATION THREAT			
Likelihood of Exposure			
1. Likelihood of Exposure	550		550
Waste Characteristics			
2. Toxicity	a	10,000	
3. Hazardous Waste Quantity	a	100	
4. Waste Characteristics	100		32
Targets			
5. Resident Individual	50	0	
6. Resident Population			
6a. Level I Concentrations	b	0	
6b. Level II Concentrations	b	0	
6c. Resident Population (lines 6a + 6b)	b	0	
7. Workers	15	0	
8. Resources	5	5	
9. Terrestrial Sensitive Environments	c	0	
10. Targets (lines 5 + 6c + 7 + 8 + 9)	b		5
Resident Population Threat Score			
11. Resident Population Threat (lines 1 x 4 x 10/82,500)	b		1.07
NEARBY POPULATION THREAT			
Likelihood of Exposure			
12. Attractiveness/Accessibility	100	5	
13. Area of Contamination	100	100	
14. Likelihood of Exposure	500		50
Waste Characteristics			
15. Toxicity	a	10,000	
16. Hazardous Waste Quantity	a	100	
17. Waste Characteristics	100		32

Site Name: Reynolds Metals Company River Road Plant **DRAFT**
Location: Muscle Shoals, Colbert County, Alabama

SOIL EXPOSURE PATHWAY SCORESHEET, Concluded

Factor Categories and Factors	Maximum Value	Value Assigned	
NEARBY POPULATION THREAT (Concluded)			
Targets			
18. Nearby Individual	1	1	
19. Population Within 1 Mile	[b]	0.54	
20. Targets (lines 18 + 19)	[b]		1.54
Nearby Population Threat Score			
21. Nearby Population Threat (Lines 14 x 17 x 20/82,500)	[b]		0.03
SOIL EXPOSURE PATHWAY SCORE			
22. Soil Exposure Pathway Score[d] (Lines 11 + 21, subject to a maximum of 100)	100		1.10

[a] Maximum value applies to waste characteristics category.
[b] Maximum value not applicable.
[c] No specific maximum value applies to factor. However, pathway score based solely on sensitive environments is limited to maximum of 60.
[d] Do not round to nearest integer.

Site Name: Reynolds Metals Company River Road Plant **DRAFT**
Location: Muscle Shoals, Colbert County, Alabama

AIR MIGRATION PATHWAY SCORESHEET

Factor Categories and Factors

	Likelihood of Release	Maximum Value	Value Assigned	
1.	Observed Release	550	0	
2.	Potential to Release			
	2a. Gas Potential to Release	500	-	
	2b. Particulate Potential to Release	500	-	
	2c. Potential to release higher of lines 2a and 2b)	500	500*	
3.	Likelihood of Release (higher of lines 1 and 2c)	550		500*
	Waste Characteristics			
4.	Toxicity/Mobility	[a]	0.8	
5.	Hazardous Waste Quantity	[a]	100	
6.	Waste Characteristics	100		3
	Targets			
7.	Nearest Individual	50	20	
8.	Population			
	8a. Level I Concentrations	[b]	0	
	8b. Level II Concentrations	[b]	0	
	8c. Potential Contamination	[b]	13	
	8d. Population (lines 8a + 8b + 8c)	[b]	13	
9.	Resources	5	0	
10.	Sensitive Environments			
	10a. Actual Contamination	[c]	0	
	10b. Potential Contamination	[c]	0.03	
	10c. Sensitive Environments (lines 10a + 10b)	[c]	0	
11.	Targets (lines 7 + 8d + 9 + 10c)	[b]		33.03
	Air Migration Pathway Score			
12.	Pathway Score (S_a) [(lines 3 x 6 x 11)/82,500][d]	100		0.60

[a] Maximum value applies to waste characteristics category.
[b] Maximum value not applicable.
[c] No specific maximum value applies to factor. However, pathway score based solely on sensitive environments is limited to maximum of 60.
[d] Do not round to nearest integer.
- Not evaluated.
* Default value.

Reynolds Metals Company River Road Plant

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Revision 2

APPENDIX C

SITE INSPECTION WORKSHEETS

Ex. 32 are missing the information is there but the # were skipped.

This appendix consists of worksheets that can be used to generate an SI site score. Completion of these worksheets is not required, but the SI investigator must evaluate an SI score, either by these worksheets, *PREscore*, or other Regional scoring tools.

The worksheets consist of instructions and data tables to be filled in with scores from HRS reference tables. The data tables may also call for Data Type and References.

DATA TYPE: The Data Type columns should be filled in with an H, Q, or + if the data are HRS quality and well documented. The Data Type column should be filled in with an E, X, or - if the data represent estimates, approximations, or are not fully documented. This type identifies data gaps for the expanded SI to investigate.

REFERENCES: The Reference columns should be filled in with coded reference numbers. The numbered reference list should be attached or the numbering should be cross-referenced to the SI Narrative Report.

The SI investigator will need the current Superfund Chemical Data Matrix (SCDM) OSWER Directive 9345.1-13 (revised semi-annually) to complete these worksheets.

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SITE INSPECTION WORKSHEETS

CERCLIS IDENTIFICATION NUMBER
ALD000652693

SITE LOCATION			
SITE NAME: LEGAL, COMMON, OR DESCRIPTIVE NAME OF SITE REYNOLDS METALS COMPANY - RIVER ROAD PLANT			
STREET ADDRESS, ROUTE, OR SPECIFIC LOCATION IDENTIFIER RIVER ROAD			
CITY FLORENCE	STATE AL	ZIP CODE 35660	TELEPHONE (205) 386-4846
COORDINATES: LATITUDE and LONGITUDE 34° 47' 37" 87° 36' 00	TOWNSHIP, RANGE, AND SECTION		

OWNER/OPERATOR IDENTIFICATION					
OWNER REYNOLDS METALS COMPANY			OPERATOR SEE ABOVE		
OWNER ADDRESS 6601 West BROAD STREET			OPERATOR ADDRESS		
CITY RICHMOND			CITY		
STATE VA	ZIP CODE 23261	TELEPHONE (804) 281-2918	STATE	ZIP CODE	TELEPHONE ( )

SITE EVALUATION		
AGENCY/ORGANIZATION DYNAMAL CORPORATION		
INVESTIGATOR MITCH COHEN		
CONTACT		
ADDRESS 230 PEACHTREE ST. STE 500		
CITY ATLANTA	STATE GA	ZIP CODE 30303
TELEPHONE (404) 681-0933		

* Reference numbers correspond reference numbers in the SIP report.

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GENERAL INFORMATION

Site Description and Operational History: Provide a brief description of the site and its operational history. State the site name, owner, operator, type of facility and operations, size of property, active or inactive status, and years of waste generation. Summarize waste treatment, storage, or disposal activities that have or may have occurred at the site; note whether these activities are documented or alleged. Identify all source types and prior spills, floods, or fires. Summarize highlights of the PA and other investigations. Cite references.

Reynolds is located approximately 1 mile east of Muscle Shoals, Colbert County, Alabama, on River Road at 34° 47′ 37″ north latitude and 87° 36′ 00″ west longitude (see Figure 1) (Ref. 1). Reynolds comprises three surface impoundments and one wastewater treatment discharge pond. The largest of the surface impoundments occupies approximately 13.5 acres and is located about 750 feet east of the main plant buildings (see Figure 2). A second surface impoundment occupies approximately 2.6 acres and is located about 500 feet northwest of the main plant buildings. The third surface impoundment, which is 1.5 acres in size, is located just north of an abandoned wastewater treatment plant in the northern portion of the property, near Wilson Lake. The wastewater treatment discharge pond is adjacent to and west of the abandoned wastewater treatment plant (WWTP) (Refs. 1; 2, p. 22).

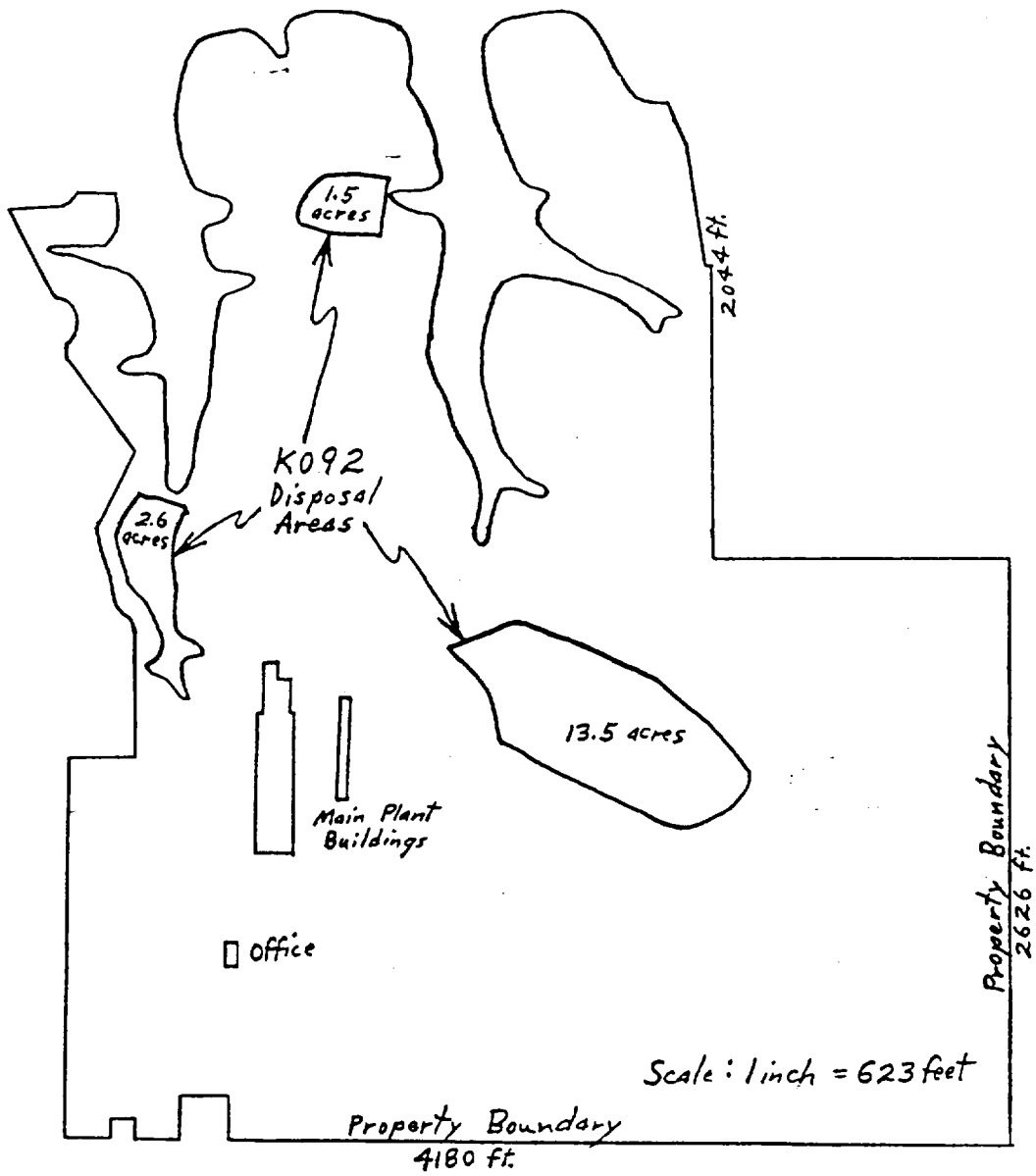
The normal annual total precipitation in the area is 52 inches, and the mean annual lake evaporation is 40 inches resulting in a net annual precipitation of 12 inches (Ref. 7, pp. 43, 63). The 2-year, 24-hour rainfall is approximately 4 inches (Ref. 8, p. 95).

Union Carbide Corporation, Mining and Metals Division (Union Carbide), first began operations at the site in 1940 (Ref. 2, p. 3). Union Carbide manufactured ferrosilicon alloys in electric arc furnaces charged with silica gravel, scrap steel, wood chips, coal and coke (Refs. 3; 4). The gases emitted from the furnaces were washed in gas scrubbers to remove solids and cyanide. Wastewater from the scrubbing operation was treated onsite at a WWTP. Treatment included the destructive conversion of cyanide to cyanate compounds. The remainder of the wastewater was flocculated in a settling tank where solids were removed and disposed in the onsite sludge lagoons (previously identified in this SIP report as ponds) (Ref. 4, p. 2). Solids were settled in at least three ponds which Reynolds identified in a RCRA Part A application (Ref. 5, Form 3, Item V). The treated water was then pumped to polishing ponds for final settling and destruction of residual cyanide prior to discharge to Wilson Lake. It should be noted that prior to the use of the WWTP, partially treated wastewater was discharged directly into Wilson Lake by Union Carbide (Ref. 4).

Reynolds purchased the facility from Union Carbide in 1980, but did not initiate manufacturing until late 1984 (Ref. 6, p. 3). Currently Southern Reclamation is operating at the facility for its parent company, Reynolds Metals Company (Ref. 39).

GENERAL INFORMATION (continued)

Site Sketch: Provide a sketch of the site. Indicate all pertinent features of the site and nearby environments including sources of wastes, areas of visible and buried wastes, buildings, residences, access roads, parking areas, fences, fields, drainage patterns, water bodies, vegetation, wells, sensitive environments, and other features.



RCRA SI Report, p.22

According to the sample results from the SI which EPS conducted at Reynolds on January 15, 1985, three source areas have been identified: a 13.5-acre settling basin, a 2.6-acre disposal basin and a 1.5-acre area that includes a diked basin and a discharge pond located near an abandoned WWTP (Ref. 2, pp. 5-7, 16, exhibit 2.2). The 13-acre settling basin is diked to a level approximately 15 feet above the road surface (Ref. 2, p. 5). The discharge pond north of the wastewater treatment plant is diked approximately 5 feet above the level of the fill material; the discharge pond west of the WWTP is apparently not diked (Ref. 2, pp. 5, 6). The 2.6-acre disposal basin is fenced with three gates. There is diking at this disposal basin, but available file material does not indicate the level of the dikes (Ref. 2, p. 7). Lead, cadmium and cyanide were detected in soil samples collected from onsite (Ref. 2, pp. 16, 25, 26, 40).

Reynolds is located in the Interior Low Plateaus physiographic province in Muscle Shoals, Colbert County, Alabama (Ref. 13, pp. 7-9). The Interior Low Plateaus physiographic province is characterized by gently rolling to virtually level topography. The area is underlain by Mississippian-age rocks near ground surface. These rocks consist primarily of limestone, which in some places contain extensive chert beds and are susceptible to dissolution by chemical weathering (Ref. 14, p. 13). Elevations within a 4-mile radius of the Reynolds range from approximately 470 to 650 feet above mean sea level (msl). Reynolds is located at an elevation of approximately 480 feet above msl (Ref. 1).

Regional stratigraphy is characterized by a regolith composed of unconsolidated clay, sand and gravel overlying alternating units of limestone (Ref. 14, pp. 40-43). Geologic units which underlie the area include, in descending stratigraphic order: residuum formed by the insitu weathering of the Tuscumbia Limestone, the Tuscumbia Limestone and the Fort Payne Chert (Refs. 14, pp. 40-43; 15, p. 8). Quaternary alluvial deposits may be present in stream beds within a 4-mile radius of the facility. The residuum comprises unstratified clay with beds and lenses of sand and gravel. The residuum ranges in thickness from approximately 0 to 100 feet, thickening toward the northeast (Ref. 15, pp. 7, 10). The underlying Tuscumbia Limestone consists of bedded crystalline limestone with chert nodules. The Tuscumbia Limestone has a maximum thickness of 200 feet in Colbert County (Ref. 15, p. 10). The Fort Payne Chert consists of siliceous limestone with abundant beds of nodular chert and underlies the Tuscumbia Limestone. The Fort Payne Chert has an average thickness of 190 feet (Refs. 14, pp. 40-43; 15, pp. 7, 10).

Groundwater occurs in the mantle of residuum and in solution openings along fractures and bedding planes in the Tuscumbia Limestone and the Fort Payne Chert (Ref. 14, pp. 40-43). The residuum does not yield large quantities of water due to its clayey nature, and water quality is generally poor (Ref. 15, p. 14). The Tuscumbia Limestone and the Fort Payne Chert are considered to be one aquifer, called the Tuscumbia-Fort Payne aquifer (Ref. 14, p. 43). Test-drilling and pumping test data indicate the existence of extensive solution openings in the

Tuscumbia Limestone and Fort Payne Chert near Muscle Shoals (Refs. 14, pp. 40-43; 15, pp. 7, 10). Based upon the soluble nature of the geologic units beneath Reynolds, karstic groundwater flow occurs in the area of the site. Solution openings in the Fort Payne Chert are particularly well developed where the overlying Tuscumbia Limestone is less than 200 feet thick (Ref. 15, p. 43). However, surficial expression of bedrock collapses from dissolution, such as sinkholes and other solutional features, are not present in the area (Ref. 1). Groundwater in the Tuscumbia-Fort Payne aquifer is generally of good chemical quality (Ref. 14, p. 43). Recharge to the aquifer is through the infiltration of precipitation through the residuum, into the aquifer (Ref. 15, p. 14).

According to the Colbert County Health Department, very few residents within the 4-mile radius of Reynolds use private wells as a drinking water supply (Ref. 16). A door-to-door survey would be necessary to find private well users.

GENERAL INFORMATION (continued)

Source Descriptions: Describe all sources at the site. Identify source type and relate to waste disposal operations. Provide source dimensions and the best available waste quantity information. Describe the condition of sources and all containment structures. Cite references.

SOURCE TYPES

Landfill: A man-made (by excavation or construction) or natural hole in the ground into which wastes have come to be disposed by backfilling, or by contemporaneous soil deposition with waste disposal.

Surface Impoundment: A natural topographic depression, man-made excavation, or diked area, primarily formed from earthen materials (lined or unlined) and designed to hold an accumulation of liquid wastes, wastes containing free liquids, or sludges not backfilled or otherwise covered; depression may be wet with exposed liquid or dry if deposited liquid has evaporated, volatilized or leached; structures that may be described as lagoon, pond, aeration pit, settling pond, tailings pond, sludge pit; also a surface impoundment that has been covered with soil after the final deposition of waste materials (i.e., buried or backfilled).

Drum: A portable container designed to hold a standard 55-gallon volume of wastes.

Tank and Non-Drum Container: Any device, other than a drum, designed to contain an accumulation of waste that provides structural support and is constructed primarily of fabricated materials (such as wood, concrete, steel, or plastic); any portable or mobile device in which waste is stored or otherwise handled.

Contaminated Soil: An area or volume of soil onto which hazardous substances have been spilled, spread, disposed, or deposited.

Pile: Any non-containerized accumulation above the ground surface of solid, non-flowing wastes; includes open dumps. Some types of waste piles are:

- Chemical Waste Pile: A pile consisting primarily of discarded chemical products, by-products, radioactive wastes, or used or unused feedstocks.
- Scrap Metal or Junk Pile: A pile consisting primarily of scrap metal or discarded durable goods (such as appliances, automobiles, auto parts, batteries, etc.) composed of materials containing hazardous substances.
- Tailings Pile: A pile consisting primarily of any combination of overburden from a mining operation and tailings from a mineral mining, beneficiation, or processing operation.
- Trash Pile: A pile consisting primarily of paper, garbage, or discarded non-durable goods containing hazardous substances.

Land Treatment: Landfarming or other method of waste management in which liquid wastes or sludges are spread over land and tilled, or liquids are injected at shallow depths into soils.

Other: Sources not in categories listed above.

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SI TABLE 1: HAZARDOUS WASTE QUANTITY (HWQ) SCORES FOR SINGLE SOURCE SITES AND FORMULAS FOR MULTIPLE SOURCE SITES

		Single Source Sites (assigned HWQ scores)	
(Column 1) TIER	(Column 2) Source Type	(Column 3) HWQ = 10	(Column 4) HWQ = 100
A Hazardous Constituent Quantity	N/A	HWQ = 1 if Hazardous Constituent Quantity data are complete HWQ = 10 if Hazardous Constituent Quantity data are not complete	>100 to 10,000 lbs
B Hazardous Wastestream Quantity	N/A	≤ 500,000 lbs	>500,000 to 50 million lbs
C Volume	Landfill	≤ 6.75 million ft^3 ≤ 250,000 yd^3	>6.75 million to 675 million ft^3 >250,000 to 25 million yd^3
	Surface impoundment	≤6,750 ft^3 ≤250 yd^3	>6,750 to 675,000 ft^3 >250 to 25,000 yd^3
	Drums	≤1,000 drums	>1,000 to 100,000 drums
	Tanks and non-drum containers	≤50,000 gallons	>50,000 to 5 million gallons
	Contaminated soil	≤6.75 million ft^3 ≤250,000 yd^3	>6.75 million to 675 million ft^3 >250,000 to 25 million yd^3
	Pile	≤6,750 ft^3 ≤250 yd^3	>6,750 to 675,000 ft^3 >250 to 25,000 yd^3
	Other	≤6,750 ft^3 ≤250 yd^3	>6,750 to 675,000 ft^3 >250 to 25,000 yd^3
D Area	Landfill	≤340,000 ft^2 ≤7.8 acres	>340,000 to 34 million ft^2 >7.8 to 780 acres
	Surface impoundment	≤1,300 ft^2 ≤0.029 acres	>1,300 to 130,000 ft^2 >0.029 to 2.9 acres
	Contaminated soil	≤3.4 million ft^2 ≤78 acres	> 3.4 million to 340 million ft^2 > 78 to 7,800 acres
	Pile	≤1,300 ft^2 ≤0.029 acres	>1,300 to 130,000 ft^2 >0.029 to 2.9 acres
	Land treatment	≤27,000 ft^2 ≤0.62 acres	>27,000 to 2.7 million ft^2 >0.62 to 62 acres

1 ton = 2,000 pounds = 1 cubic yard = 4 drums = 200 gallons

TABLE 1 (CONTINUED)

Single Source Sites (assigned HWQ scores)		Multiple Source Sites		
(Column 5) HWQ = 10,000	(Column 6) HWQ = 1,000,000	(Column 7) Divisors for Assigning Source WQ Values	(Column 2) Source Type	(Column 1) TIER
>10,000 to 1 million lbs	> 1 million lbs	lbs ÷ 1	N/A	A Hazardous Constituent Quantity
>50 million to 5 billion lbs	> 5 billion lbs	lbs ÷ 5,000	N/A	B Hazardous Wastestream Quantity
>675 million to 67.5 billion ft^3 >25 million to 2.5 billion yd^3	> 67.5 billion ft^3 > 2.5 billion yd^3	ft^3 ÷ 67,500 yd^3 ÷ 2,500	Landfill	C Volume
>675,000 to 67.5 million ft^3 >25,000 to 2.5 million yd^3	> 67.5 million ft^3 > 2.5 million yd^3	ft^3 ÷ 67.5 yd^3 ÷ 2.5	Surface Impoundment	
>100,000 to 10 million drums	> 10 million drums	drums ÷ 10	Drums	
>5 million to 500 million gallons	> 500 million gallons	gallons ÷ 500	Tanks and non-drum containers	
>675 million to 67.5 billion ft^3 >25 million to 2.5 billion yd^3	> 67.5 billion ft^3 > 2.5 billion yd^3	ft^3 ÷ 67,500 yd^3 ÷ 2,500	Contaminated Soil	
>675,000 to 67.5 million ft^3 >25,000 to 2.5 million yd^3	> 67.5 million ft^3 > 2.5 million yd^3	ft^3 ÷ 67.5 yd^3 ÷ 2.5	Pile	
>675,000 to 67.5 million ft^3 >25,000 to 2.5 million yd^3	> 67.5 million ft^3 > 2.5 million yd^3	ft^3 ÷ 67.5 yd^3 ÷ 2.5	Other	
>34 million to 3.4 billion ft^2 >780 to 78,000 acres	> 3.4 billion ft^2 >78,000 acres	ft^2 ÷ 3,400 acres ÷ 0.078	Landfill	D Area
>130,000 to 13 million ft^2 >2.9 to 290 acres	> 13 million ft^2 > 290 acres	ft^2 ÷ 13 acres ÷ 0.00029	Surface Impoundment	
> 340 million to 34 billion ft^2 > 7,800 to 780,000 acres	> 34 billion ft^2 > 780,000 acres	ft^2 ÷ 34,000 acres ÷ 0.78	Contaminated Soil	
> 130,000 to 13 million ft^2 > 2.9 to 290 acres	> 13 million ft^2 > 290 acres	ft^2 ÷ 13 acres ÷ 0.00029	Pile	
>2.7 million to 270 million ft^2 >62 to 6,200 acres	> 270 million ft^2 > 6,200 acres	ft^2 ÷ 270 acres ÷ 0.0062	Land Treatment	

1 ton = 2,000 pounds = 1 cubic yard = 4 drums = 200 gallons

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HAZARDOUS WASTE QUANTITY (HWQ) CALCULATION

For each migration pathway, evaluate HWQ associated with sources that are available (i.e., incompletely contained) to migrate to that pathway. (Note: If *Actual Contamination Targets* exist for ground water, surface water, or air migration pathways, assign the calculated HWQ score or 100, whichever is greater, as the HWQ score for that pathway.) For each source, evaluate HWQ for one or more of the four tiers (SI Table 1; HRS Table 2-5) for which data exist: constituent quantity, wastestream quantity, source volume, and source area. Select the tier that gives the highest value as the source HWQ. Select the source volume HWQ rather than source area HWQ if data for both tiers are available.

Column 1 of SI Table 1 indicates the quantity tier. Column 2 lists source types for the four tiers. Columns 3, 4, 5, and 6 provide ranges of waste amount for sites with only one source, corresponding to HWQ scores at the tops of the columns. Column 7 provides formulas to obtain source waste quantity values at sites with multiple sources.

1. Identify each source type.
2. Examine all waste quantity data available for each source. Record constituent quantity and waste stream mass or volume. Record dimensions of each source.
3. Convert source measurements to appropriate units for each tier to be evaluated.
4. For each source, use the formulas in the last column of SI Table 1 to determine the waste quantity value for each tier that can be evaluated. Use the waste quantity value obtained from the highest tier as the quantity value for the source.
5. Sum the values assigned to each source to determine the total site waste quantity.
6. Assign HWQ score from SI Table 2 (HRS Table 2-6).

Note these exceptions to evaluate soil exposure pathway HWQ (see HRS Table 5-2):

- The divisor for the area (square feet) of a landfill is 34,000.
- The divisor for the area (square feet) of a pile is 34.
- Wet surface impoundments and tanks and non-drum containers are the only sources for which volume measurements are evaluated for the soil exposure pathway.

Assume Impoundments are dry. RCRA 51, pp. 67.

SI TABLE 2: HWQ SCORES FOR SITES

Site WQ Total	HWQ Score
0	0
1[a] to 100	1[b]
> 100 to 10,000	100
> 10,000 to 1 million	10,000
> 1 million	1,000,000

[a] If the WQ total is between 0 and 1, round it to 1.
[b] If the hazardous constituent quantity data are not complete, assign the score of 10.

SI TABLE 3: WASTE CHARACTERIZATION WORKSHEET

Site Name: Reynolds Metals

References RCRA SI Report, pp. 16, 22, 25, 26

Sources:

1. Settling Basin
2. Disposal Basin
3. Discharge Ponds
4.
5.
6.
7.
8.
9.

SOURCE	HAZARDOUS SUBSTANCE	TOXICITY	GROUND WATER PATHWAY		SURFACE WATER PATHWAY											AIR Pathway	
					OVERLAND/FLOOD MIGRATION							GROUND WATER TO SURFACE WATER				Toxicity mobility	
			GW Mobility (HRS Table 3-8)	Tox/ Mobility Value (HRS Table 3-9)	Per (HRS Tables 4-10 and 4-11)	Tox/Per Value (HRS Table 4-12)	Bioac Pot. (HRS Table 4-15)	Tox/ Pers/ Bioac Value (HRS Table 4-16)	Ecotox (HRS Table 4-19)	Ecotox/ Pers (HRS Table 4-20)	Ecotox/ Pers/ Bioacc Value (HRS Table 4-21)	Tox/ Mob/ Pers Value (HRS Table 4-26)	Tox/ Mob/ Pers/ Bioacc Value (HRS Table 4-28)	Ecotox/ Mob/ Pers Value (HRS Table 4-29)	Ecotox/ Mob/ Per/ Bioacc Value (HRS Table 4-30)	Gas	Part.
1.3	Pb	10,000	1	10,000	1	10,000	50	5×10^5	1,000	1000	5×10^6					NA	0.2
1.3	Cd	10,000	1	10,000	1	10,000	5000	5×10^7	1000	1000	5×10^6					NA	0.8
1.3	Cyanide	100	1	100	0.4	40	0.5	20	5,000	400	200					NA	0.08

For Worst Case Scenario, it was assumed that metals were in solution (liquid) when disposed, since they were disposed in wastewater and sludges. Also, it was assumed that [illegible]

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Ground Water Observed Release Substances Summary Table

On SI Table 4, list the hazardous substances associated with the site detected in ground water samples for that aquifer. Include only those substances directly observed or with concentrations significantly greater than background levels. Obtain toxicity values from the Superfund Chemical Data Matrix (SCDM). Assign mobility a value of 1 for all observed release substances regardless of the aquifer being evaluated. For each substance, multiply the toxicity by the mobility to obtain the toxicity/mobility factor value; enter the highest toxicity/mobility value for the aquifer in the space provided.

Ground Water Actual Contamination Targets Summary Table

If there is an observed release at a drinking water well, enter each hazardous substance meeting the requirements for an observed release by well and sample ID on SI Table 5 and record the detected concentration. Obtain benchmark, cancer risk, and reference dose concentrations from SCDM. For MCL and MCLG benchmarks, determine the highest percentage of benchmark obtained for any substance. For cancer risk and reference dose, sum the percentages for the substances listed. If benchmark, cancer risk, or reference dose concentrations are not available for a particular substance, enter N/A for the percentage. If the highest benchmark percentage or the percentage sum calculated for cancer risk or reference dose equals or exceeds 100%, evaluate the population using the well as a Level I target. If these percentages are less than 100% or all are N/A, evaluate the population using the well as a Level II target for that aquifer.

GROUND WATER PATHWAY

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SITENAME: In Karst deposited as liquids

CONTAMINANT	TOXICITY	MOBILITY	TOXICITY/MOBILITY
Cadmium	10,000	1	10,000
LEAD	10000	1	10,000
cyanide	100	1	100

signa mobility factor of 1.00 if a contaminant is found in an observed release

SURFACE WATER PATHWAY
(SENSITIVE ENVIRONMENTS)

SITENAME: _____

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CONTAMINANT	ECOTOXICITY	PERSISTENCE	ECOTOXICITY/ PERSISTENCE	ENVIRONMENTAL BIOACCUMULATION	ECOTOXICITY/PERSISTENCE BIOACCUMULATION
CADMIUM	1000	1.0	1000	5000	5×10^6
LEAD	1000	1.0	1000	5,000	5×10^6
~~CHROMIUM~~	~~10000~~	~~1.0~~	~~10000~~	~~5~~	~~50000~~
CYANIDE	1,000	0.4	400	0.5	200

FRESH ____ OR SALT ____ OR MIXING AREA ____? RIVER ____ OR LAKE ____ OR BOTH ____

SURFACE WATER CONTAMINANT
(Drinking water & Food Chain)

SITE NAME: CONFIDENTIAL

CONTAMINANT	TOXICITY	PERSISTENCE	TOXICITY/ PERSISTENCE	FOODCHAIN BIOACCUMULATION	TOXICITY/PERSISTENCE BIOACCUMULATION
Cadmium	10000	1.0	10000	50000	5×10^7
LEAD	10000	1.0	10000	.5	5000
~~CHROMIUM~~	~~10000~~	~~1.0~~	~~10000~~	~~5~~	~~50000~~
Cyanide	100	0.4	40	0.5	20

FRESH ____ OR SALT ____ OR MIXING AREA ____? RIVER ____ OR LAKE ____ OR BOTH ____

Soil Exposure and AIR PATHWAY

SITE NAME: CONFIDENTIAL

Part, Gas or Both	CONTAMINANT	TOXICITY	GAS HYG. POT.	MOB. (G)	MOB. (P)	MATRIX TOX / MOB.
Part.	CADMIUM	10,000	NA	NA	0.00008	0.8
Part.	LEAD	10,000	NA	NA	0.00008	0.8
Part.	~~CHROMIUM~~	~~10,000~~	~~NA~~	~~NA~~	~~.02~~	~~200~~
Part.	cyanide	1,000	NA	NA	0.00008	0.08

Assign a mobility factor of 0.02 for particulates that meet an observed release.
Assign a mobility factor of 1.00 for each gaseous substance that meets an observed release

No groundwater samples were collected.

SI TABLE 4: GROUND WATER OBSERVED RELEASE SUBSTANCES (BY AQUIFER)

Sample ID	Hazardous Substance	Bckgrd. Conc.	Toxicity/ Mobility	References
		Highest Toxicity/Mobility		

SI TABLE 5: GROUND WATER ACTUAL CONTAMINATION TARGETS

Well ID: _____ Level I _____ Level II _____ Population Served _____ References _____

Sample ID	Hazardous Substance	Conc. (µg/L)	Benchmark Conc. (MCL or MCLG)	% of Benchmark	Cancer Risk Conc.	% of Cancer Risk Conc.	RfD	% of RfD
			Highest Percent		Sum of Percents		Sum of Percents	

Well ID: _____ Level I _____ Level II _____ Population Served _____ References _____

Sample ID	Hazardous Substance	Conc. (µg/L)	Benchmark Conc. (MCL or MCLG)	% of Benchmark	Cancer Risk Conc.	% of Cancer Risk Conc.	RfD	% of RfD
			Highest Percent		Sum of Percents		Sum of Percents	

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GROUND WATER PATHWAY
GROUND WATER USE DESCRIPTION

Describe Ground Water Use within 4 Miles of the Site:
Describe generalized stratigraphy, aquifers, municipal and private wells

(see attached sheet for geology information)

According to the Colbert County Health Department, very few residents within the 4-mile radius of RMC use private wells as a supply of drinking water. Any private well that does exist in the study area may be expected to be drilled to a depth of approximately 750 feet bls ~~(Ref. m)~~. (telecon with Don Simmons, Colbert County Health Dept).

Show Calculations of Ground Water Drinking Water Populations for each Aquifer:
Provide apportionment calculations for blended supply systems.
County average number of persons per household: _____ Reference _____

No local water utilities use groundwater for drinking water. Refs. 19-23

Exact locations of any private wells are not known. This would take a door-to-door survey.

Reference numbers correspond to reference numbers in the SIP report.

GROUND WATER PATHWAY WORKSHEET

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LIKELIHOOD OF RELEASE	Score	Data Type	Refs
1. OBSERVED RELEASE: If sampling data or direct observation support a release to the aquifer, assign a score of 550. Record observed release substances on SI Table 4.	0		
2. POTENTIAL TO RELEASE: Depth to aquifer: _____feet. If sampling data do not support a release to the aquifer, and the site is in karst terrain or the depth to aquifer is 70 feet or less, assign a score of 500; otherwise, assign a score of 340. Optionally, evaluate potential to release according to HRS Section 3.	500	[illegible]	14 p 43 Karst Terrain
No groundwater samples were collected. LR =	500		

TARGETS			
Are any wells part of a blended system? Yes____ No_____ If yes, attach a page to show apportionment calculations.			
3. ACTUAL CONTAMINATION TARGETS: If analytical evidence indicates that any target drinking water well for the aquifer has been exposed to a hazardous substance from the site, evaluate the factor score for the number of people served (SI Table 5). Level I: _____ people x 10 = _____ Level II: _____ people x 1 = _____ Total =	0		
4. POTENTIAL CONTAMINATION TARGETS: Determine the number of people served by drinking water wells for the aquifer or overlying aquifers that are not exposed to a hazardous substance from the site; record the population for each distance category in SI Table 6a or 6b. Sum the population values and multiply by 0.1.	0	H	Refs. 19-23
5. NEAREST WELL: Assign a score of 50 for any Level I Actual Contamination Targets for the aquifer or overlying aquifer. Assign a score of 45 if there are Level II targets but no Level I targets. If no Actual Contamination Targets exist, assign the Nearest Well score from SI Table 6a or 6b. If no drinking water wells exist within 4 miles, assign 0.	0		
6. WELLHEAD PROTECTION AREA (WHPA): If any source lies within or above a WHPA for the aquifer, or if a ground water observed release has occurred within a WHPA, assign a score of 20; assign 5 if neither condition applies but a WHPA is within 4 miles; otherwise assign 0.	0		
7. RESOURCES: Assign a score of 5 if one or more ground water resource applies; assign 0 if none applies. • Irrigation (5 acre minimum) of commercial food crops or commercial forage crops • Watering of commercial livestock • Ingredient in commercial food preparation • Supply for commercial aquaculture • Supply for a major or designated water recreation area, excluding drinking water use	0		
Sum of Targets T=	0		

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SI TABLE 6 (From HRS TABLE 3-12): VALUES FOR POTENTIAL CONTAMINATION GROUND WATER TARGET POPULATIONS

SI Table 6a: Other Than Karst Aquifers

Distance from Site	Pop.	Nearest Well (choose highest)	Population Served by Wells within Distance Category												Pop. Value	Ref.
			1 to 10	11 to 30	31 to 100	101 to 300	301 to 1000	1001 to 3000	3001 to 10,000	10,001 to 30,000	30,001 to 100,000	100,001 to 300,000	300,001 to 1,000,000	1,000,000 to 3,000,000		
0 to $\frac{1}{4}$ mile		20	4	17	53	164	522	1,633	5,214	16,325	52,137	163,246	521,360	1,632,455		
> $\frac{1}{4}$ to $\frac{1}{2}$ mile		18	2	11	33	102	324	1,013	3,233	10,122	32,325	101,213	323,243	1,012,122		
> $\frac{1}{2}$ to 1 mile		9	1	5	17	52	167	523	1,669	5,224	16,684	52,239	166,835	522,385		
> 1 to 2 miles		5	0.7	3	10	30	94	294	939	2,939	9,385	29,384	93,845	293,842		
> 2 to 3 miles		3	0.5	2	7	21	68	212	678	2,122	6,778	21,222	67,777	212,219		
>3 to 4 miles		2	0.3	1	4	13	42	131	417	1,306	4,171	13,060	41,709	130,596		

Nearest Well = [ ]

Sum = [ ]

Assumed that there are 0 private wells in 4-mile radius of the site, because a Colbert County Health Dept. contact said there are very few and those present are completed at a depth of approximately 150 feet.

SI TABLE 6 (From HRS TABLE 3-12): VALUES FOR POTENTIAL CONTAMINATION GROUND WATER TARGET POPULATIONS (continued)

SI Table 6b: Karst Aquifers

Distance from Site	Pop.	Nearest Well (choose highest)	Population Served by Wells within Distance Category												Pop. Value	Ref.
			1 to 10	11 to 30	31 to 100	101 to 300	301 to 1000	1001 to 3000	3001 to 10,000	10,001 to 30,000	30,001 to 100,000	100,001 to 300,000	300,001 to 1,000,000	1,000,000 to 3,000,000		
0 to $\frac{1}{4}$ mile		20	4	17	53	164	522	1,633	5,214	16,325	52,137	163,246	521,360	1,632,455		
> $\frac{1}{4}$ to $\frac{1}{2}$ mile		20	2	11	33	102	324	1,013	3,233	10,122	32,325	101,213	323,243	1,012,122		
> $\frac{1}{2}$ to 1 mile		20	2	9	26	82	261	817	2,607	8,163	26,068	81,623	260,680	816,227		
> 1 to 2 miles		20	2	9	26	82	261	817	2,607	8,163	26,068	81,623	260,680	816,227		
> 2 to 3 miles		20	2	9	26	82	261	817	2,607	8,163	26,068	81,623	260,680	816,227		
>3 to 4 miles		20	2	9	26	82	261	817	2,607	8,163	26,068	81,623	260,680	816,227		

Nearest Well = [ ] Sum = [ ]

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GROUND WATER PATHWAY WORKSHEET (concluded)

WASTE CHARACTERISTICS	Score	Data Type	Does not Apply
8. If any Actual Contamination Targets exist for the aquifer or overlying aquifers, assign the calculated hazardous waste quantity score or a score of 100, whichever is greater; if no Actual Contamination Targets exist, assign the hazardous waste quantity score calculated for sources available to migrate to ground water.	100	H	
9. Assign the highest ground water toxicity/mobility value from SI Table 3 or 4. lead and cadmium	10,000	H	
10. Multiply the ground water toxicity/mobility and hazardous waste quantity scores. Assign the Waste Characteristics score from the table below: (from HRS Table 2-7)	32		

Product	WC Score
0	0
>0 to <10	1
10 to <100	2
100 to <1,000	3
1,000 to < 10,000	6
10,000 to <1E + 05	10
1E + 05 to <1E + 06	18
1E + 06 to <1E + 07	32
1E + 07 to <1E + 08	56
1E + 08 or greater	100

WC = 32

Multiply LR by T and by WC. Divide the product by 82,500 to obtain the ground water pathway score for each aquifer. Select the highest aquifer score. If the pathway score is greater than 100, assign 100.

GROUND WATER PATHWAY SCORE: $\frac{LR \times T \times WC}{82,500}$

0

(Maximum of 100)

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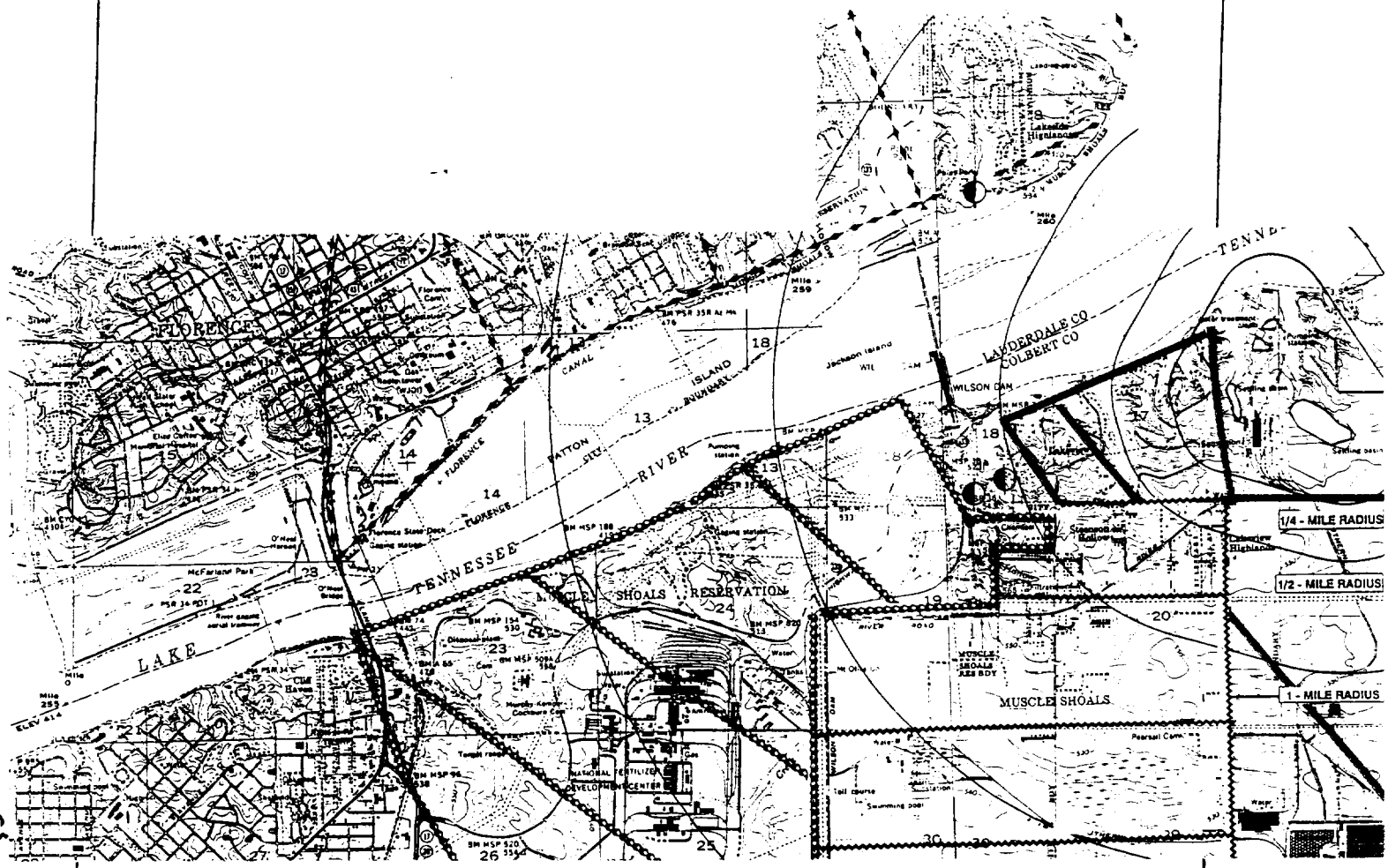
SURFACE WATER PATHWAY

Sketch of the Surface Water Migration Route:
Label all surface water bodies. Include runoff route and drainage direction, probable point of entry, and 15-mile target distance limit. Mark sample locations, intakes, fisheries, and sensitive environments. Indicate flow directions, tidal influence, and rate.



[illegible] pathway [illegible] 15 [illegible]
[illegible] surface [illegible]
[illegible] on [illegible]. Seven [illegible] Island
[illegible] 1 more mile [illegible] above [illegible]

Plant waste was discharged to an inlet on Wilson Lake / Tennessee River from the site (Ref. [illegible])

No surface water samples were collected.

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SI TABLE 7: SURFACE WATER OBSERVED RELEASE SUBSTANCES

Sample ID	and concentration Hazardous Substance	Bckgrd. Conc.	Toxicity/ Persistence	Toxicity/ Persis./ Bioaccum	Ecotoxicity/ Persis/ Ecobioaccum	References
		Highest Values				

SI TABLE 8: SURFACE WATER DRINKING WATER ACTUAL CONTAMINATION TARGETS

Intake ID: _____ Sample Type _____ Level I _____ Level II _____ Population Served _____ References _____

Sample ID	Hazardous Substance	Conc. (µg/L)	Benchmark Conc. (MCL or MCLG)	% of Benchmark	Cancer Risk Conc.	% of Cancer Risk Conc.	RfD	% of RfD
			Highest Percent		Sum of Percents		Sum of Percents	

Intake ID: _____ Sample Type _____ Level I _____ Level II _____ Population Served _____ References _____

Sample ID	Hazardous Substance	Conc. (µg/L)	Benchmark Conc. (MCL or MCLG)	% of Benchmark	Cancer Risk Conc.	% of Cancer Risk Conc.	RfD	% of RfD
			Highest Percent		Sum of Percents		Sum of Percents	

Surface water runoff flows from Reynolds approximately 200 feet overland from the 1.5-acre area that includes a diked basin and a discharge pond, before entering the Tennessee River. Soil types affecting runoff from Reynolds include the Dewey loam soil type (Ref. 29). The upper 4 to 6 inches of this soil type consist of a reddish-brown or brown mellow and friable loam which contains a large quantity of silt, some fine sand and clay. This is underlain by a 1- to 3-inch subsurface layer of reddish-brown clay loam. The subsoil is a reddish-brown silty clay loam or clay which extends to a depth ranging from 3 to 12 feet (Ref. 29, p. 14). Reynolds is located in an area of minimal flooding (Ref. 28). Wilson Dam is approximately 1-mile downstream from Reynolds and creates the backwaters of Wilson Lake. Pickwick Lake is the next lake downstream of Wilson Dam on the Tennessee River. The Tennessee River comprises the entire 15-mile surface water migration pathway (Ref. 1). The average flow rate of the Tennessee River was recorded over a period of 96 years averaging 51,680 cubic feet per second (cfs) gauged at Florence, Alabama, approximately 4-miles downstream from Reynolds (Ref. 27).

Almost the entire population within the 4-mile radius of Reynolds uses drinking water provided by municipal suppliers. Muscle Shoals Water Department serves approximately 7,000 connections with water drawn from a surface water intake located south of Wilson Dam and approximately 1.25 mile downstream from Reynolds at river-mile 259.5 (Refs. 1; 19). The Muscle Shoals service area includes Muscle Shoals, portions of the Colbert County Water System and the Spring Valley Water Department (Refs. 19; 26; 31). Using the 1990 U.S. Bureau of the Census

SURFACE WATER PATHWAY

Surface Water Observed Release Substances Summary Table

On SI Table 7, list the hazardous substances detected in surface water samples for the watershed, which can be attributed to the site. Include only those substances in observed releases (direct observation) or with concentration levels significantly above background levels. Obtain toxicity, persistence, bioaccumulation potential, and ecotoxicity values from SCDM. Enter the highest toxicity/persistence, toxicity/persistence/bioaccumulation, and ecotoxicity/persistence/ecobioaccumulation values in the spaces provided.

- TP = Toxicity x Persistence
- TPB = TP x bioaccumulation
- ETPB = EP x bioaccumulation (EP = ecotoxicity x persistence)

Drinking Water Actual Contamination Targets Summary Table

For an observed release at or beyond a drinking water intake, on SI Table 8 enter each hazardous substance by sample ID and the detected concentration. For surface water sediment samples detecting a hazardous substance at or beyond an intake, evaluate the intake as Level II contamination. Obtain benchmark, cancer risk, and reference dose concentrations for each substance from SCDM. For MCL and MCLG benchmarks, determine the highest percentage of benchmark obtained for any substance. For cancer risk and reference dose, sum the percentages of the substances listed. If benchmark, cancer risk, or reference dose concentrations are not available for a particular substance, enter N/A for the percentage. If the highest benchmark percentage or the percentage sum calculated for cancer risk or reference dose equals or exceeds 100%, evaluate the population served by the intake as a Level I target. If the percentages are less than 100% or all are N/A, evaluate the population served by the intake as a Level II target.

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SURFACE WATER PATHWAY
LIKELIHOOD OF RELEASE AND DRINKING WATER THREAT WORKSHEET

LIKELIHOOD OF RELEASE– OVERLAND/FLOOD MIGRATION	Score	Data Type	Refs
1. OBSERVED RELEASE: If sampling data or direct observation support a release to surface water in the watershed, assign a score of 550. Record observed release substances on SI Table 7.			
2. POTENTIAL TO RELEASE: Distance to surface water: ____(feet) If sampling data do not support a release to surface water in the watershed, use the table below to assign a score from the table below based on distance to surface water and flood frequency.	500	H	1

Distance to surface water <2500 feet	500
Distance to surface water >2500 feet, and:	
Site in annual or 10-yr floodplain	500
Site in 100-yr floodplain	400
Site in 500-yr floodplain	300
Site outside 500-yr floodplain	100

Optionally, evaluate surface water potential to release according to HRS Section 4.1.2.1.2

No surface water samples were collected. LR = 500

LIKELIHOOD OF RELEASE GROUND WATER TO SURFACE WATER MIGRATION	Score	Data Type	Refs
1. OBSERVED RELEASE: If sampling data or direct observation support a release to surface water in the watershed, assign a score of 550. Record observed release substances on SI Table 7. NOTE: Evaluate ground water to surface water migration only for a surface water body that meets all of the following conditions: 1) A portion of the surface water is within 1 mile of site sources having a containment factor greater than 0. 2) No aquifer discontinuity is established between the source and the above portion of the surface water body. 3) The top of the uppermost aquifer is at or above the bottom of the surface water. Elevation of top of uppermost aquifer _____ Elevation of bottom of surface water body _____	0		
2. POTENTIAL TO RELEASE: Use the ground water potential to release. Optionally, evaluate surface water potential to release according to HRS Section 3.1.2.	0		

0

There are no other known surface water intakes located along the 15-mile surface water migration pathway from the site. The Tennessee River downstream from Sevenmile Island supports recreational activities (Ref. 24).

The TVA-owned Sevenmile Island Wildlife Management Area (SIWMA) is located approximately 8 miles downstream from Reynolds (Ref. 1). SIWMA is used as a game and fishery reserve. Bald eagles are frequently seen on Sevenmile Island (Ref. 17). State-designated endangered or threatened species which may be present in the Tennessee River include the orange-footed pimpleback mussel (Plethobasus cooperianus), the pink mucket pearly mussel (Lampsilis obiculata) and the rough pigtoe pearly mussel (Pleurobema plenum) (Ref. 18).

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SURFACE WATER PATHWAY
LIKELIHOOD OF RELEASE AND DRINKING WATER THREAT WORKSHEET (CONTINUED)

DRINKING WATER THREAT TARGETS	Score	Data Type	Refs
Record the water body type, flow, and number of people served by each drinking water intake within the target distance limit in the watershed. If there is no drinking water intake within the target distance limit, assign 0 to factors 3, 4, and 5. Intake Name / Water Body Type / Flow / People Served Muscle Shoals / Large River / 51,680 CFS / 17920 Florence Water Dept / Large River / 51,680 CFS / 19587 Sheffield Water / Large River / 51,680 CFS / 800 TVA / Large River / 51,680 CFS Are any intakes part of a blended system? Yes _____ No X If yes, attach a page to show apportionment calculations. 3. ACTUAL CONTAMINATION TARGETS: If analytical evidence indicates a drinking water intake has been exposed to a hazardous substance from the site, list the intake name and evaluate the factor score for the drinking water population (SI Table 8). Level I: _____ people x 10 = _____ Level II: _____ people x 1 = _____ Total =	0	.5	19, 20, 21, 22,
4. POTENTIAL CONTAMINATION TARGETS: Determine the number of people served by drinking water intakes for the watershed that have not been exposed to a hazardous substance from the site. Assign the population values from SI Table 9. Sum the values and multiply by 0.1.	1	H	19, 20, 21, 22, 23.
5. NEAREST INTAKE: Assign a score of 50 for any Level I Actual Contamination Drinking Water Targets for the watershed. Assign a score of 45 if there are Level II targets for the watershed, but no Level I targets. If no Actual Contamination Drinking Water Targets exist, assign a score for the intake nearest the PPE from SI Table 9. If no drinking water intakes exist, assign 0.	0		
6. RESOURCES: Assign a score of 5 if one or more surface water resource applies; assign 0 if none applies. • Irrigation (5 acre minimum) of commercial food crops or commercial forage crops • Watering of commercial livestock • Ingredient in commercial food preparation • Major or designated water recreation area, excluding drinking water use	5	H	RA 24 Recreation
SUM OF TARGETS T=	6		

SI TABLE 9 (From HRS Table 4-14): DILUTION-WEIGHTED POPULATION VALUES FOR POTENTIAL CONTAMINATION FOR SURFACE WATER MIGRATION PATHWAY

Type of Surface Water Body	Pop.	Nearest Intake	Number of people									Pop. Value
			0	1 to 10	11 to 30	31 to 100	101 to 300	301 to 1,000	1,001 to 3,000	3,001 to 10,000	10,001 to 30,000	
Minimal Stream (<10 cfs)		20	0	4	17	53	164	522	1,633	5,214	16,325	
Small to moderate stream (10 to 100 cfs)		2	0	0.4	2	5	16	52	163	521	1,633	
Moderate to large stream (> 100 to 1,000 cfs)		0	0	0.04	0.2	0.5	2	5	16	52	163	
Large Stream to river (>1,000 to 10,000 cfs)		0	0	0.004	0.02	0.05	0.2	0.5	2	5	16	
Large River (> 10,000 to 100,000 cfs)	38,307	0	0	0	0.002	0.005	0.02	0.05	0.2	0.5	~~16~~ 2	5
Very Large River (>100,000 cfs)		0	0	0	0	0.001	0.002	0.005	0.02	0.05	0.2	
Shallow ocean zone or Great Lake (depth < 20 feet)		0	0	0	0.002	0.005	0.02	0.05	0.2	0.5	2	
Moderate ocean zone or Great Lake (Depth 20 to 200 feet)		0	0	0	0	0.001	0.002	0.005	0.02	0.05	0.2	
Deep ocean zone or Great Lake (depth > 200 feet)		0	0	0	0	0	0.001	0.003	0.008	0.03	0.08	
3-mile mixing zone in quiet flowing river (≥ 10 cfs)		10	0	2	9	26	82	261	817	2,607	8,163	

Nearest Intake = [ ]

Sum = 5

(See next page, Table 4-14 continued)

References 19, 20, 21, 22, 23

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SURFACE WATER PATHWAY

Human Food Chain Actual Contamination Targets Summary Table

On SI Table 10, list the hazardous substances detected in sediment, aqueous, sessile benthic organism tissue, or fish tissue samples (taken from fish caught within the boundaries of the observed release) by sample ID and concentration. Evaluate fisheries within the boundaries of observed releases detected by sediment or aqueous samples as Level II, if at least one observed release substance has a bioaccumulation potential factor value of 500 or greater (see SI Table 7). Obtain benchmark, cancer risk, and reference dose concentrations from SCDM. For FDAAL benchmarks, determine the highest percentage of benchmark obtained for any substance. For cancer risk and reference dose, sum the percentages for the substances listed. If benchmark, cancer risk, or reference dose concentrations are not available for a particular substance, enter N/A for the percentage. If the highest benchmark percentage sum calculated for cancer risk or reference dose equals or exceeds 100%, evaluate this portion of the fishery as subject to Level I concentrations. If the percentages are less than 100% or all are N/A, evaluate the fishery as a Level II target.

Sensitive Environment Actual Contamination Targets Summary Table

On SI Table 11, list each hazardous substance detected in aqueous or sediment samples at or beyond wetlands or a surface water sensitive environment by sample ID. Record the concentration. If contaminated sediments or tissues are detected at or beyond a sensitive environment, evaluate the sensitive environment as Level II. Obtain benchmark concentrations from SCDM. For AWQC/AALAC benchmarks, determine the highest percentage of benchmark of the substances detected in aqueous samples. If benchmark concentrations are not available for a particular substance, enter N/A for the percentage. If the highest benchmark percentage equals or exceeds 100%, evaluate that part of the sensitive environment subject to Level I concentrations. If the percentage is less than 100%, or all are N/A, evaluate the sensitive environment as Level II.

TABLE 4-14 (Concluded)

Type of Surface Water Body[b]	Number of People				
	30,001 to 100,000	100,001 to 300,000	300,001 to 1,000,000	1,000,001 to 3,000,000	3,000,001 to 10,000,000
Minimal stream (< 10 cfs)	52,137	163,246	521,360	1,632,455	5,213,590
Small to moderate stream (10 to 100 cfs)	5,214	16,325	52,136	163,245	521,359
Moderate to large stream (> 100 to 1,000 cfs)	521	1,633	5,214	16,325	52,136
Large stream to river (> 1,000 to 10,000 cfs)	52	163	521	1,632	5,214
Large river (> 10,000 to 100,000 cfs)	5	16	52	163	521
Very large river (> 100,000 cfs)	0.5	2	5	16	52
Shallow ocean zone or Great Lake (depth < 20 feet)	5	16	52	163	521
Moderate ocean zone or Great Lake (depth 20 to 200 feet)	0.5	2	5	16	52
Deep zone or Great Lake (depth > 200 feet)	0.3	1	3	8	26
3-mile mixing zone in quiet flowing river (≥ 10 cfs)	26,068	81,623	260,680	816,227	2,606,795

[a]Round the number of people to nearest integer. Do not round the assigned dilution-weighted population value to nearest integer.

[b]Treat each lake as a separate type of water body and assign it a dilution-weighted population value using the surface water body type with the same dilution weight from Table 4-13 as the lake. If drinking water is withdrawn from coastal tidal water or the ocean, assign a dilution-weighted population value to it using the surface water body type with the same dilution weight from Table 4-13 as the coastal tidal water or the ocean zone.

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Muscle Shoals

7000 connections x 2.56 =
17,920 persons

Florence Water Dept.

23,179 x 2.53 = 58,643 persons

only 1 intake located downstream
This intakes serves 1/3 of total
population
1/3 of 58,643 = ~ 19,587

Sheffield
800 workers

Total served by intakes
on TN. River = 38,307

SI TABLE 10: HUMAN FOOD CHAIN ACTUAL CONTAMINATION TARGETS FOR WATERSHED

Fishery ID: _____ Sample Type _____ Level I _____ Level II _____ References _____

Sample ID	Hazardous Substance	Conc. (mg/kg)	Benchmark Concentration (FDAAL)	% of Benchmark	Cancer Risk Concentration.	% of Cancer Risk Concentration	RfD	% of RfD
			Highest Percent		Sum of Percents		Sum of Percents	

SI TABLE 11: SENSITIVE ENVIRONMENT ACTUAL CONTAMINATION TARGETS FOR WATERSHED

Environment ID: _____ Sample Type _____ Level I _____ Level II _____ Environment Value _____

Sample ID	Hazardous Substance	Conc.. (µg/L)	Benchmark Concentration (AWQC or AALAC)	% of Benchmark	References
			Highest Percent		

Environment ID: _____ Sample Type _____ Level I _____ Level II _____ Environment Value _____

Sample ID	Hazardous Substance	Conc.. (µg/L)	Benchmark Concentration (AWQC or AALAC)	% of Benchmark	References
			Highest Percent		

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SURFACE WATER PATHWAY (continued)
HUMAN FOOD CHAIN THREAT WORKSHEET

HUMAN FOOD CHAIN THREAT TARGETS	Score	Data Type	Refs
Record the water body type and flow for each fishery within the target distance limit. If there is no fishery within the target distance limit, assign a score of 0 at the bottom of this page.			
Fishery Name Rockwick Reservoir Water Body Tenn River Flow 51,680 cfs Species_____ Production_____lbs/yr Species_____ Production_____lbs/yr Fishery Name_____ Water Body_____ Flow_____cfs Species_____ Production_____lbs/yr Species_____ Production_____lbs/yr Fishery Name_____ Water Body_____ Flow_____cfs Species_____ Production_____lbs/yr Species_____ Production_____lbs/yr			
FOOD CHAIN INDIVIDUAL			
7. ACTUAL CONTAMINATION FISHERIES: If analytical evidence indicates that a fishery has been exposed to a hazardous substance with a bioaccumulation factor greater than or equal to 500 (SI Table 10), assign a score of 50 if there is a Level I fishery. Assign 45 if there is a Level II fishery, but no Level I fishery.			
8. POTENTIAL CONTAMINATION FISHERIES: If there is a release of a substance with a bioaccumulation factor greater than or equal to 500 to a watershed containing fisheries within the target distance limit, but there are no Level I or Level II fisheries, assign a score of 20. If there is no observed release to the watershed, assign a value for potential contamination fisheries from the table below using the lowest flow at all fisheries within the target distance limit:	No O.R.	H	Ref. 2, pp. 16, 22, 25, 26

Lowest Flow	FCI Value
<10 cfs	20
10 to 100 cfs	2
>100 cfs, coastal tidal waters, oceans, or Great Lakes	0
3-mile mixing zone in quiet flowing river	10

FCI Value =

SUM OF TARGETS T = 0

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SURFACE WATER PATHWAY (continued)
ENVIRONMENTAL THREAT WORKSHEET

When measuring length of wetlands that are located on both sides of a surface water body, sum both frontage lengths. For a sensitive environment that is more than one type, assign a value for each type.

ENVIRONMENTAL THREAT TARGETS	Score	Data Type	Refs
Record the water body type and flow for each surface water sensitive environment within the target distance (see SI Table 12). If there is no sensitive environment within the target distance limit, assign a score of 0 at the bottom of the page.			1; 18

	Environment Name	Water Body Type	Flow
State Des. E	orange-footed ... mussel	Tennessee River	51,[illegible] cfs
" "	pink mucket mussel	" "	" cfs
" "	rough pigtoe mussel	" "	" cfs
	(see below)		cfs
			cfs

9. ACTUAL CONTAMINATION SENSITIVE ENVIRONMENTS: If sampling data or direct observation indicate any sensitive environment has been exposed to a hazardous substance from the site, record this information on SI Table 11, and assign a factor value for the environment (SI Tables 13 and 14).

Environment Name	Environment Type and Value (SI Tables 13 & 14)	Multiplier (10 for Level I, 1 for Level II)	Product
		x =	
		x =	
		x =	
		x =	
		Sum =	

10. POTENTIAL CONTAMINATION SENSITIVE ENVIRONMENTS:

Flow	Dilution Weight (SI Table 12)	Environment Type and Value (SI Tables 13 & 14)	Pot. Cont.	Product
cfs	0.0001 x	50 x	0.1 =	0.0005
cfs	0.0001 x	50 x	0.1 =	0.0005
cfs	0.0001 x	50 x	0.1 =	0.0005
cfs	x	x	0.1 =	
cfs	x	x	0.1 =	
			Sum =	0.0015

T = 0

Note: The Alabama cavefish and slackwater darter are not reported to be present specifically in the Tennessee River so they are [illegible] used [illegible] environments.

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SI TABLE 13 (HRS TABLE 4-23): SURFACE WATER AND AIR SENSITIVE ENVIRONMENTS VALUES

SENSITIVE ENVIRONMENT	ASSIGNED VALUE
Critical habitat for Federal designated endangered or threatened species Marine Sanctuary National Park Designated Federal Wilderness Area Ecologically important areas identified under the Coastal Zone Wilderness Act Sensitive Areas identified under the National Estuary Program or Near Coastal Water Program of the Clean Water Act Critical Areas identified under the Clean Lakes Program of the Clean Water Act (subareas in lakes or entire small lakes) National Monument (air pathway only) National Seashore Recreation Area National Lakeshore Recreation Area	100
Habitat known to be used by Federal designated or proposed endangered or threatened species National Preserve National or State Wildlife Refuge Unit of Coastal Barrier Resources System Coastal Barrier (undeveloped) Federal land designated for the protection of natural ecosystems Administratively Proposed Federal Wilderness Area Spawning areas critical for the maintenance of fish/shellfish species within a river system, bay, or estuary Migratory pathways and feeding areas critical for the maintenance of anadromous fish species within river reaches or areas in lakes or coastal tidal waters in which the fish spend extended periods of time Terrestrial areas utilized by large or dense aggregations of vertebrate animals (semi-aquatic foragers) for breeding National river reach designated as recreational	75
Habitat known to be used by State designated endangered or threatened species Habitat known to be used by a species under review as to its Federal endangered or threatened status Coastal Barrier (partially developed) Federally designated Scenic or Wild River	50
State land designated for wildlife or game management State designated Scenic or Wild River State designated Natural Area Particular areas, relatively small in size, important to maintenance of unique biotic communities	25
State designated areas for the protection of maintenance of aquatic life under the Clean Water Act	5
Wetlands See SI Table 14 (Surface Water Pathway) or SI Table 23 (Air Pathway)	

SI TABLE 14 (HRS TABLE 4-24): SURFACE WATER WETLANDS FRONTAGE VALUES

Total Length of Wetlands	Assigned Value
Less than 0.1 mile	0
0.1 to 1 mile	25
Greater than 1 to 2 miles	50
Greater than 2 to 3 miles	75
Greater than 3 to 4 miles	100
Greater than 4 to 8 miles	150
Greater than 8 to 12 miles	250
Greater than 12 to 16 miles	350
Greater than 16 to 20 miles	450
Greater than 20 miles	500

SI TABLE 12 (HRS Table 4-13): SURFACE WATER DILUTION WEIGHTS

Type of Surface Water Body		Assigned Dilution Weight
Descriptor	**Flow Characteristics**	
Minimal stream	< 10 cfs	1
Small to moderate stream	10 to 100 cfs	0.1
Moderate to large stream	> 100 to 1,000 cfs	0.01
Large stream to river	> 1,000 to 10,000 cfs	0.001
Large river 51,680 cfs.	> 10,000 to 100,000 cfs	0.0001
Very large river	> 100,000 cfs	0.00001
Coastal tidal waters	Flow not applicable; depth not applicable	0.001
Shallow ocean zone or Great Lake	Flow not applicable; depth less than 20 feet	0.001
Moderate depth ocean zone or Great Lake	Flow not applicable; depth 20 to 200 feet	0.0001
Deep ocean zone or Great Lake	Flow not applicable; depth greater than 200 feet	0.000005
3-mile mixing zone in quiet flowing river	10 cfs or greater	0.5

SURFACE WATER PATHWAY (concluded)
WASTE CHARACTERISTICS, THREAT, AND PATHWAY SCORE SUMMARY

WASTE CHARACTERISTICS	Score
14. If an Actual Contamination Target (drinking water, human food chain, or environmental threat) exists for the watershed, assign the calculated hazardous waste quantity score, or a score of 100, whichever is greater.	100
15. Assign the highest value from SI Table 7 (observed release) or SI Table 3 (no observed release) for the hazardous substance waste characterization factors below. Multiply each by the surface water hazardous waste quantity score and determine the waste characteristics score for each threat.	

	Substance Value		HWQ		Product	WC Score (from Table) ~~(Maximum of 100)~~
Drinking Water Threat Toxicity/Persistence	(lead and cadmium) 10,000	x	100	=	1×10^6	32 max = 100
Food Chain Threat Toxicity/Persistence Bioaccumulation	(cadmium) 5×10^7	x	100	=	5×10^9	180 max = 1000
Environmental Threat Ecotoxicity/Persistence/ Ecobioaccumulation	5×10^6	x	100	=	5×10^8	100 max = 1000

Product	WC Score
0	0
>0 to <10	1
10 to <100	2
100 to <1,000	3
1,000 to < 10,000	6
10,000 to <1E + 05	10
1E + 05 to <1E + 06	18
1E + 06 to <1E + 07	32
1E + 07 to <1E + 08	56
1E + 08 to <1E + 09	100
1E + 09 to <1E + 10	180
1E + 10 to <1E + 11	320
1E + 11 to <1E + 12	560
1E + 12 or greater	1000

SURFACE WATER PATHWAY THREAT SCORES

Threat	Likelihood of Release (LR) Score	Targets (T) Score	Pathway Waste Characteristics (WC) Score (determined above)	Threat Score $\frac{LR \times T \times WC}{82,500}$
Drinking Water	500	6	32	(maximum of 100) 1.16
Human Food Chain	500	0	180	(maximum of 100) 0
Environmental	500	0	100	(maximum of 60) 0

SURFACE WATER PATHWAY SCORE (Drinking Water Threat + Human Food Chain Threat + Environmental Threat) — (maximum of 100) 1.16

SOIL EXPOSURE PATHWAY

If there is no observed contamination (e.g., ground water plume with no known surface source), do not evaluate the soil exposure pathway. Discuss evidence for no soil exposure pathway.

Soil Exposure Resident Population Targets Summary

For each property (duplicate page 35 as necessary):

If there is an area of observed contamination on the property and within 200 feet of a residence, school, or day care center, enter on Table 15 each hazardous substance by sample ID. Record the detected concentration. Obtain cancer risk, and reference dose concentrations from SCDM. Sum the cancer risk and reference dose percentages for the substances listed. If cancer risk or reference dose concentrations are not available for a particular substance, enter N/A for the percentage. If the percentage sum calculated for cancer risk or reference dose equals or exceeds 100%, evaluate the residents and students as Level I. If both percentages are less than 100% or all are N/A, evaluate the targets as Level II.

No resident targets as far as available file indicates.

SI TABLE 15: SOIL EXPOSURE RESIDENT POPULATION TARGETS

Residence ID: _____ Level I _____ Level II _____ Population _____

Sample ID	Hazardous Substance	Conc. (mg/kg)	Cancer Risk Concentration	% of Cancer Risk Conc.	RfD	% of RfD	Toxicity Value	References
			Highest Percent		Sum of Percents		Sum of Percents	

Residence ID: _____ Level I _____ Level II _____ Population _____

Sample ID	Hazardous Substance	Conc. (mg/kg)	Cancer Risk Concentration	% of Cancer Risk Conc.	RfD	% of RfD	Toxicity Value	References
			Highest Percent		Sum of Percents		Sum of Percents	

Residence ID: _____ Level I _____ Level II _____ Population _____

Sample ID	Hazardous Substance	Conc. (mg/kg)	Cancer Risk Concentration	% of Cancer Risk Conc.	RfD	% of RfD	Toxicity Value	References
			Highest Percent		Sum of Percents		Sum of Percents	

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SOIL EXPOSURE PATHWAY WORKSHEET
RESIDENT POPULATION THREAT

LIKELIHOOD OF EXPOSURE	Score	Data Type	Refs
1. OBSERVED CONTAMINATION: If evidence indicates presence of observed contamination (depth of 2 feet or less), assign a score of 550; otherwise, assign a 0. Note that a likelihood of exposure score of 0 results in a soil exposure pathway score of 0.	550	H	b
LE =	550		

TARGETS

2. RESIDENT POPULATION: Determine the number of people living or attending school or day care on a property with an area of observed contamination and whose residence, school, or day care center, respectively, is on or within 200 feet of the area of observed contamination. Level I: 0 people x 10 = _____ Level II: 0 people x 1 = _____ Sum =	0		
3. RESIDENT INDIVIDUAL: Assign a score of 50 if any Level I resident population exists. Assign a score of 45 if there are Level II targets but no Level I targets. If no resident population exists (*i.e.*, no Level I or Level II targets), assign 0 (HRS Section 5.1.3).	0		
4. WORKERS: Assign a score from the table below for the total number of workers at the site and nearby facilities with areas of observed contamination associated with the site.	5		Ref. 39

Number of Workers	Score
0	0
1 to 100	5
101 to 1,000	10
>1,000	15

5. TERRESTRIAL SENSITIVE ENVIRONMENTS: Assign a value for each terrestrial sensitive environment (SI Table 16) in an area of observed contamination.	0		

Terrestrial Sensitive Environment Type	Value

Sum =			
6. RESOURCES: Assign a score of 5 if any one or more of the following resources is present on an area of observed contamination at the site; assign 0 if none applies. • Commercial agriculture • Commercial silviculture • Commercial livestock production or commercial livestock grazing	0		
Total of Targets T=	5		

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SOIL EXPOSURE PATHWAY WORKSHEET
NEARBY POPULATION THREAT

LIKELIHOOD OF EXPOSURE		Score	Data Type	Ref.
7. Attractiveness/Accessibility (from SI Table 17 or HRS Table 5-6)	Value 5	50	H	2
Area of Contamination (from SI Table 18 or HRS Table 5-7)	Value 100			
Likelihood of Exposure (from SI Table 19 or HRS Table 5-8)				
	LE =	50		

note: if there is no area of observed contamination, LE = 0.

TARGETS	Score	Data Type	Ref.
8. Assign a score of 0 if Level I or Level II resident individual has been evaluated or if no individuals live within 1/4 mile travel distance of an area of observed contamination. Assign a score of 1 if nearby population is within 1/4 mile travel distance and no Level I or Level II resident population has been evaluated.	1	H	1;25;26
9. Determine the population within 1 mile travel distance that is not exposed to a hazardous substance from the site (*i.e.*, properties that are not determined to be Level I or Level II); record the population for each distance category in SI Table 20 (HRS Table 5-10). Sum the population values and multiply by 0.1.	.54	H	1; 25; 26
T =	1.54		

Radial Distance	Households	Population
0 - 0.25 mile	9	23*
0.25 - 0.50 mile	46	118*
0.50 - 1 mile	195	499*
1 - 2 miles	GEMS	4,688
2 - 3 miles	GEMS	10,103
3 - 4 miles	GEMS	4,952
	Total	20,383

* Population = households X 2.56 people per household (Refs. 1; 25; 26)

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SI TABLE 16 (HRS TABLE 5-5): SOIL EXPOSURE PATHWAY TERRESTRIAL SENSITIVE ENVIRONMENT VALUES

TERRESTRIAL SENSITIVE ENVIRONMENT	*ASSIGNED VALUE*
Terrestrial critical habitat for Federal designated endangered or threatened species National Park Designated Federal Wilderness Area National Monument	100
Terrestrial habitat known to be used by Federal designated or proposed threatened or endangered species National Preserve (terrestrial) National or State terrestrial Wildlife Refuge Federal land designated for protection of natural ecosystems Administratively proposed Federal Wilderness Area Terrestrial areas utilized by large or dense aggregations of animals (vertebrate species) for breeding	75
Terrestrial habitat used by State designated endangered or threatened species Terrestrial habitat used by species under review for Federal designated endangered or threatened status	50
State lands designated for wildlife or game management State designated Natural Areas Particular areas, relatively small in size, important to maintenance of unique biotic communities	25

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SI TABLE 17 (HRS TABLE 5-6): ATTRACTIVENESS/ACCESSIBILITY VALUES

Area of Observed Contamination	Assigned Value
Designated recreational area	100
Regularly used for public recreation (for example, vacant lots in urban area)	75
Accessible and unique recreational area (for example, vacant lots in urban area)	75
Moderately accessible (may have some access improvements–for example, gravel road) with some public recreation use	50
Slightly accessible (for example, extremely rural area with no road improvement) with some public recreation use	25
Accessible with no public recreation use	10
Surrounded by maintained fence or combination of maintained fence and natural barriers	5
Physically inaccessible to public, with no evidence of public recreation use	0

Fenced (Ref. 2 p. 6)

SI TABLE 18 (HRS TABLE 5-7): AREA OF CONTAMINATION FACTOR VALUES

Total area of the areas of observed contamination (square feet)	Assigned Value
≤ to 5,000	5
> 5,000 to 125,000	20
> 125,000 to 250,000	40
> 250,000 to 375,000	60
> 375,000 to 500,000	80
> 500,000	100

A total of 17.6 acres (surface impoundments) = 766,656 ft^2

$$\left[17.6 \times \left(\frac{43,560\ ft^2}{1\ acre}\right)\right] = 766,656\ ft^2$$

(Ref. 2)

SI TABLE 19 (HRS TABLE 5-8): NEARBY POPULATION LIKELIHOOD OF EXPOSURE FACTOR VALUES

AREA OF CONTAMINATION FACTOR VALUE	ATTRACTIVENESS/ACCESSIBILITY FACTOR VALUE						
	100	75	50	25	10	5	0
100	500	500	375	250	125	50	0
80	500	375	250	125	50	25	0
60	375	250	125	50	25	5	0
40	250	125	50	25	5	5	0
20	125	50	25	5	5	5	0
5	50	25	5	5	5	5	0

SI TABLE 20 (HRS TABLE 5-10): DISTANCE-WEIGHTED POPULATION VALUES FOR NEARBY POPULATION THREAT

Travel Distance Category (miles)	Pop.	Number of people within the travel distance category												Pop. Value
		0	1 to 10	11 to 30	31 to 100	101 to 300	301 to 1,000	1,001 to 3,000	3,001 to 10,001	10,001 to 30,000	30,001 to 100,000	100,001 to 300,000	300,001 to 1,000,000	
Greater than 0 to $\frac{1}{4}$	23	0	0.1	0.4	1.0	4	13	41	130	408	1,303	4,081	13,034	0.4
Greater than $\frac{1}{4}$ to $\frac{1}{2}$	118	0	0.05	0.2	0.7	2	7	20	65	204	652	2,041	6,517	2
Greater than $\frac{1}{2}$ to 1	499	0	0.02	0.1	0.3	1	3	10	33	102	326	1,020	3,258	3

Reference(s). 1; 25; 26

Sum = 5.4

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SOIL EXPOSURE PATHWAY WORKSHEET (concluded)

WASTE CHARACTERISTICS

10.	Assign the hazardous waste quantity score calculated for soil exposure HRS Section 5.1.2.2 and HRS Table 5-2.	100
11.	Assign the highest toxicity value from SI Table ~~16~~ 3 or for the soil exposure pathway lead and cadmium	10,000
12.	Multiply the toxicity and hazardous waste quantity scores. Assign the Waste Characteristics score from the table below:	WC = 32

Product	WC Score
0	0
>0 to <10	1
10 to <100	2
100 to <1,000	3
1,000 to < 10,000	6
10,000 to <1E + 05	10
1E + 05 to <1E + 06	18
1E + 06 to <1E + 07	32
1E + 07 to <1E + 08	56
1E + 08 or greater	100

RESIDENT POPULATION THREAT SCORE: 1.07

(Likelihood of Exposure, Question 1; Targets = Sum of Questions 2, 3, 4, 5, 6)

$$\frac{LE \times T \times WC}{\cancel{82,500}}$$

550 x 5 x 32

NEARBY POPULATION THREAT SCORE: 0.03

(Likelihood of Exposure, Question 7; Targets = Sum of Questions 8, 9)

$$\frac{LE \times T \times WC}{\cancel{82,500}}$$

$$\frac{50 \times 1.54 \times 32}{82,500} = 0.03$$

SOIL EXPOSURE PATHWAY SCORE: 1.10 (Maximum of 100)

Resident Population Threat + Nearby Population Threat ÷ 82,500

AIR PATHWAY

Air Pathway Observed Substances Summary Table

On SI Table 21, list the hazardous substances detected in air samples of a release from the site. Include only those substances with concentrations significantly greater than background levels. Obtain benchmark, cancer risk, and reference dose concentrations from SCDM. For NAAQS/NESHAPS benchmarks, determine the highest percentage of benchmark obtained for any substance. For cancer risk and reference dose, sum the percentages for the substances listed. If benchmark, cancer risk, or reference dose concentrations are not available for a particular substance, enter N/A for the percentage. If the highest benchmark percentage or the percentage sum calculated for cancer risk or reference dose equals or exceeds 100%, evaluate targets in the distance category from which the sample was taken and any closer distance categories as Level I. If the percentages are less than 100% or all are N/A, evaluate targets in that distance category and any closer distance categories that are not Level I as Level II.

SI TABLE 21: AIR PATHWAY OBSERVED RELEASE SUBSTANCES

Sample ID: _____ Level I _____ Level II _____ Distance from Sources (mi) ____ References _____

Hazardous Substance	Conc. (µg/m³)	Gaseous Particulate	Benchmark Conc. (NAAQS or NESHAPS)	% of Benchmark	Cancer Risk Conc.	% of Cancer Risk Conc.	RfD	% of RfD
	Highest Toxicity/ Mobility		Highest Percent		Sum of Percents		Sum of Percents	

Sample ID: _____ Level I _____ Level II _____ Distance from Sources (mi) ____ References _____

Hazardous Substance	Conc. (µg/m³)	Toxicity/ Mobility	Benchmark Conc. (NAAQS or NESHAPS)	% of Benchmark	Cancer Risk Conc.	% of Cancer Risk Conc.	RfD	% of RfD
	Highest Toxicity/ Mobility		Highest Percent		Sum of Percents		Sum of Percents	

Sample ID: _____ Level I _____ Level II _____ Distance from Sources (mi) ____ References _____

Hazardous Substance	Conc. (µg/m³)	Toxicity/ Mobility	Benchmark Conc. (NAAQS or NESHAPS)	% of Benchmark	Cancer Risk Conc.	% of Cancer Risk Conc.	RfD	% of RfD
	Highest Toxicity/ Mobility		Highest Percent		Sum of Percents		Sum of Percents	

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AIR PATHWAY WORKSHEET

LIKELIHOOD OF RELEASE	Score	Data Type	Refs
1. OBSERVED RELEASE: If sampling data or direct observation support a release to air, assign a score of 550. Record observed release substances on SI Table 21.			
2. POTENTIAL TO RELEASE: If sampling data do not support a release to air, assign a score of 500. Optionally, evaluate air migration gaseous and particulate potential to release (HRS Section 6.1.2).	500		
LR =	500		

TARGETS			
3. ACTUAL CONTAMINATION POPULATION: Determine the number of people within the target distance limit subject to exposure from a release of a hazardous substance to the air. a) Level I: _____ people x 10 = _____ b) Level II: _____ people x 1 = _____ Total =			
4. POTENTIAL TARGET POPULATION: Determine the number of people within the target distance limit not subject to exposure from a release of a hazardous substance to the air, and assign the total population score from SI Table 22. Sum the values and multiply the sum by 0.1.	13	H	1;25;26
5. NEAREST INDIVIDUAL: Assign a score of 50 if there are any Level I targets. Assign a score of 45 if there are Level II targets but no Level I targets. If no Actual Contamination Population exists, assign the Nearest Individual score from SI Table 22.	20	E and L	1;25
6. ACTUAL CONTAMINATION SENSITIVE ENVIRONMENTS: Sum the sensitive environment values (SI Table 13) and wetland acreage values (SI Table 23) for environments subject to exposure from the release of a hazardous substance to the air.	0		
7. POTENTIAL CONTAMINATION SENSITIVE ENVIRONMENTS: Use SI Table 24 to evaluate sensitive environments not subject to exposure from a release.	0.03		
8. RESOURCES: Assign a score of 5 if one or more air resources apply within 1/2 mile of a source; assign a 0 if none applies. • Commercial agriculture • Commercial silviculture • Major or designated recreation area	0		
T =	33.03		

Sensitive Environment Type	Value

Wetland Acreage	Value

Unknown workers are pr...

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al Distance	Households	Population
- 0.25 mile	9	23* + 100 workers
0.25 - 0.50 mile	46	118*
0.50 - 1 mile	195	499*
1 - 2 miles	GEMS	4,688
2 - 3 miles	GEMS	10,103
3 - 4 miles	GEMS	4,952
	Total	20,383

* Population = households X 2.56 people per household (Refs. 1; 25; 26)

approx 51-100 workers located at So. Reclamation (Ref. 39)

SI TABLE 22 (From HRS TABLE 6-17): VALUES FOR POTENTIAL CONTAMINATION AIR TARGET POPULATIONS

Distance from Site	Pop.	Nearest Individual (choose highest)	Number of People within the Distance Category												Pop. Value
			1 to 10	11 to 30	31 to 100	101 to 300	301 to 1,000	1,001 to 3,000	3,001 to 10,000	10,001 to 30,000	30,001 to 100,000	100,001 to 300,000	300,001 to 1,000,000	1,000,000 to 3,000,000	
On a source	0	20	4	17	53	164	522	1,633	5,214	16,325	52,137	163,246	521,360	1,632,455	0
0 to $\frac{1}{4}$ mile	123	20*	1	4	13	41	131	408	1,304	4,081	13,034	40,812	130,340	408,114	41
> $\frac{1}{4}$ to $\frac{1}{2}$ mile	118	2	0.2	0.9	3	9	28	88	282	882	2,815	8,815	28,153	88,153	9
> $\frac{1}{2}$ to 1 mile	195	1	0.06	0.3	0.9	3	8	26	83	261	834	2,612	8,342	26,119	3
> 1 to 2 miles	4,688	0	0.02	0.09	0.3	0.8	3	8	27	83	266	833	2,659	8,326	27
> 2 to 3 miles	10,103	0	0.009	0.04	0.1	0.4	1	4	12	38	120	375	1,199	3,755	38
>3 to 4 miles	4,952	0	0.005	0.02	0.07	0.2	0.7	2	7	28	73	229	730	2,285	7
	Nearest Individual =	20												Sum =	125

(See attached sheet for population figures) References 1; ~~25~~; 26

* Score = 20 if the Nearest Individual is within $\frac{1}{8}$ mile of a source; score = 7 if the Nearest Individual is between $\frac{1}{8}$ and $\frac{1}{4}$ mile of a source.

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SI TABLE 23 (HRS TABLE 6-18): AIR PATHWAY VALUES FOR WETLAND AREA

Wetland Area	Assigned Value
< 1 acre	0
1 to 50 acres	25
> 50 to 100 acres	75
> 100 to 150 acres	125
> 150 to 200 acres	175
> 200 to 300 acres	250
> 300 to 400 acres	350
> 400 to 500 acres	450
> 500 acres	500

SI TABLE 24: DISTANCE WEIGHTS AND CALCULATIONS FOR AIR PATHWAY POTENTIAL CONTAMINATION SENSITIVE ENVIRONMENTS

Distance	Distance Weight	Sensitive Environment Type and Value (from SI Tables 13 and ~~20~~ 23	Product
On a Source	0.10	x	
		x	
0 to 1/4 mile	0.025	x	
		x	
		x	
1/4 to 1/2 mile	0.0054	x	
		x	
		x	
1/2 to 1 mile	0.0016	x	
		x	
		x	
1 to 2 miles	0.0005	x wetlands ~ 40 acres	0.0125
		x 25	
		x	
2 to 3 miles	0.00023	x wetlands ~ 60 acres	0.0172
		x 75	
		x	
3 to 4 miles	0.00014	x wetlands ~ 20 acres	0.0035
		x 25	
		x	
> 4 miles	0	x	

40

60

20

estimated from TOPO

Total Environments Score = 0.03

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WASTE CHARACTERISTICS

9. If any Actual Contamination Targets exist for the air pathway, assign the calculated hazardous waste quantity score or a score of 100, whichever is greater; if there are no Actual Contamination Targets for the air pathway, assign the calculated HWQ score for sources available to air migration.	100
10. Assign the highest air toxicity/mobility value from SI Table 21. lead and cadmium	0.8
11. Multiply the air pathway toxicity/mobility and hazardous waste quantity scores. Assign the Waste Characteristics score from the table below: 100 x 0.8 = 80	WC = 3

Product	WC Score
0	0
>0 to <10	1
10 to <100	2
100 to <1,000	3
1,000 to < 10,000	6
10,000 to <1E + 05	10
1E + 05 to <1E + 06	18
1E + 06 to <1E + 07	32
1E + 07 to <1E + 08	56
1E + 08 or greater	100

AIR PATHWAY SCORE:

$$\frac{LR \times T \times WC}{82,500}$$

0.60 (maximum of 100)

$$\frac{500 \times 33 \times 3}{82,500} = 0.60$$

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SITE SCORE CALCULATION	S	S^2
GROUND WATER PATHWAY SCORE (S_{GW})	0	0
SURFACE WATER PATHWAY SCORE (S_{SW})	1.16	1.3456
SOIL EXPOSURE (S_S)	1.10	1.21
AIR PATHWAY SCORE (S_A)	0.60	0.36
SITE SCORE $\sqrt{\frac{S_{GW}^2+S_{SW}^2+S_S^2+S_A^2}{4}}$ =		0.85

COMMENTS

Cadmium, lead and cyanide were detected in soil samples collected from former pond areas at Reynolds. The high dilution of the Tennessee River makes it unlikely that Reynolds would pose a threat to the surface water intakes or fisheries that are located downstream. Therefore, based on the presence of minimal populations in all pathways and no documented observed releases to groundwater, surface water or ambient air as presented in the available file material, it is recommended that the site evaluation be considered accomplished.

OVERSIZED

DOCUMENT

REFERENCE NO. 2

RCRA 3012 SITE INSPECTION REPORT

FOR

REYNOLDS METALS COMPANY
ALABAMA RECLAMATION PLANT
ALD000652693
MUSCLE SHOALS, ALABAMA
SITE INSPECTION
JANUARY 15, 1985

Presented to:

Alabama Department of Environmental Management
Montgomery, Alabama

Presented by:

Environmental Protection Systems, Inc.
Jackson, Mississippi
Pensacola, Florida
Mobile, Alabama

Project No. 1.84.174.01
March, 1985

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EXHIBITS
REFERENCES
PHOTOGRAPHS (Not allowed at this facility)

1.0 EXECUTIVE SUMMARY

The Reynolds Metals facility, located on River Road in Muscle Shoals, Alabama, is known as ~~Alabama Reclamation~~ Wrong Southern Reclamation Company. This facility was purchased in 1980 from the Union Carbide Corporation. Due to economic considerations during this time period, Reynolds Metals has not operated on this site. Operations began in mid-to-late 1984. Due to this, it is apparent that no waste material at this site has been placed there by the Reynolds facility.

The Union Carbide facility began operation at this site in 1940. They were involved in the manufacture of ferro-silicone alloys ~~and~~ using electric wrong furnaces. Contaminated waste from the plant resulted from the washing of flue gases and gas scrubbers, which removed non-combustible material for discharge to the atmosphere. Cyanide was also present in the scrubbing process. This cyanide was placed in the destruction unit, which was comprised of chlorination and pH adjustment. In order to meet the suspended solids requirement of their NPDES permit, the solids in this water were settled using a floculator. The solids were settled in at least four areas on the site. They were identified in a Part A application filed by the Reynolds Metals facility. Each of these areas were indicated as having the following acreage: 13.5, 2.6, and 1.5. The solids in these areas are visibly different from surrounding naturally occurring soils. In addition, these areas have been invaded by kudzu and other shallow root system plants. Analysis of the material between 12-18 inches deep in these areas indicates total lead levels present in a range from 500 to 2,300 ppm. 200°, 2200, ? EP-toxicity analysis indicated that <1 mg/l of this material was leachable. Further action is recommended to determine the total depth of these disposal areas and whether or not the material at the base is EP-toxic.

2.0 BACKGROUND

2.1. Location

The Reynolds Metals facility on River Road is located at the following address:

~~Alabama Reclamation~~ Southern Reclamation Company
~~River Road~~
Muscle Shoals, Alabama 35660
Colbert County (033)
Latitude 34°47'37"
Longitude ~~87°37'00"~~ 87-36-00"

It should be noted that this facility is known in the Alabama Department of Environmental Management (ADEM), as Reynolds Metals-River Road Plant; however, its correct name is Alabama Reclamation Plant. The directions to the plant are as follows: Take Second Avenue to Ford Road. Turn left on Ford Road, travel to River Road and turn right. The plant is located to the left. Refer to Exhibit 2.1 for Topographic Map.

2.2 Site Layout

Exhibit 2.2 is a line drawing of the Reynolds facility indicating the three waste disposal areas. These areas are also indicated in Exhibit 2.1 on the Topographic Map. Access to the facility can be obtained by gates along River Road. The area is fenced, thereby limiting access to plant areas. The northern most border is the Tennessee River.

2.3 Ownership History

This facility is currently owned by the Reynolds Metals Company, 6601 West Broad Street, Richmond, Virginia; 23261. The facility was purchased in 1980 from the Union Carbide Corporation. Purchase was handled through the

Union Carbide Real Estate office in Terrytown, New York. Union Carbide operated this facility from 1940 to 1980.

2.4 Site Use History

As was indicated in Section 2.3, the Reynolds Metals Company purchased the facility in 1980 from the Union Carbide Corporation. Reynolds had anticipated using this facility immediately; however, the economy influenced the decision. Therefore, Reynolds did not begin using the facility until late 1984. The Reynolds facility itself, does not treat, store, or dispose of hazardous waste. Currently process information is proprietary.

Review of the AWIC files for Union Carbide indicated that operations initially began around 1940. The plant was involved in the manufacturing of ferro-silicone alloys in electric furnaces. Contaminated waste from the plant resulted from the washing of flue gases and gas scrubbers, which removed non-combustible materials before discharged to the atmosphere. The solids removed consist principally of carbon and silica. Cyanide was also present in the gases and was removed in the scrubbing process. The company indicates that cyanide had been treated since operations began. Prior to 1965, the company operated a k~~elsenum~~ carbide furnace at the plant. They indicated that adequate cyanide treatment had been provided the plant since commencement of operation. The primary waste problem was suspended material in the wastewater. This suspended carbonaceous material was the subject of many complaints from boat and property owners. Union Carbide made improvements in their wastewater treatment system in early 1971 to remedy the solids problem. This involved settling the dust in ponds on the facility. Three ponds are located on the property. One is 1.5 acres,

which company?

?

?

another is 2.6 acres, and the third is 13.5 acres. This is indicated as a settling basin on the topographic map. Reynolds Metals filed a Part A application for this plant based on the placement of the emissions control dust in these areas. At that time, it was listed as K092 - emission control dust sludge from ferromanganese production. This was subsequently removed from the Environmental Protection Agency (EPA), generic waste list.

2.5 Permit and Regulatory History

The Union Carbide facility was regulated both under air and water permits throughout its history. The facility primarily generated emissions control dust, which was combined with water and the gas scrubbers. This water was treated prior the discharge to the Tennessee River. In 1980, the Reynolds Metals Company purchased the Union Carbide facility. At that time, they filed a Part A application for the disposal areas present on the site. The Part A application was filed protectively, so the Reynolds facility would not have to file both a Part A and Part B RCRA application. The waste material was tested and interim status application was withdrawn. No manufacturing operation took place between 1980 and mid-1984. Therefore, there were no active permits during this time period.

2.6 Remedial Actions to Date

There is no record of any emergency corrective actions being performed at this site. During the early 1970's, the Water Improvement Commission did have several complaints about the Union Carbide facility. At that time, it was indicated that high amounts of solids were being discharged to the Tennessee River. Subsequently, Union Carbide installed an improved wastewater treatment system. The ASIC, as well as Florence State

University, ran a feasibility study to determine the effective removal of the material from the embayment. This was done in 1971. At that time, it was determined to be undesirable to remove the deposited material. Approximately 12 inches of silt and organic material was found to overlay the carbonaceous solids. Removal of this material would have created an extremely undesirable condition downstream. Therefore, the material was left in the embayment.

2.7 Summary Trip Report

Environmental Protection Systems, Inc. (EPS), conducted a RCRA 3012 site investigation with limited sampling, on January 15, 1985. The sampling team arrived at 8:45 a.m., and met Mr. Earl McGuire, a plant engineer. Weather conditions were clear and cold, with temperatures ranging from 22°F to approximately 38°F during the day. It was slightly winding in the early morning. Weather reports indicated a wind-chill factor of -2°F. The EPS sampling team consisted of Ms. Donalea Dinsmore, Environmental Chemist and Mr. Thomas McAlpin, Field Sampling Support Staff. At that time, it was explained that the current processes at this facility were proprietary, and no pictures were to be allowed of the plant site. Mr. McGuire had been given a copy of the site sampling plan prior to site investigation in order that the areas of concern could be located.

Sampling began at approximately 10:00 a.m., when three samples were composited from the 13.5 acre settling basin (RE-S03-SB). In addition a field replicate sample was also taken (RE-S04-SB). This replicate was taken within a foot of the three soil samples. This 13.5 acre basin appeared to be diked to a level approximately 15 feet above the road surface. The perimeter of this basin was covered in kudzu, which extended

into the basin itself. The pipe was evident around the perimeter of this settling basin and a large pipe was evident at the north end. The center of the basin was sparsely populated with grasses and bushes. Samples were taken in unvegetated areas and at a depth of approximately 18 inches. Areas of erosion were evident throughout the basin area. Materials within this basin appeared to be somewhat wet and soft. It should be noted that access to this basin would be severely limited, depending upon seasonal considerations. The vegetation around this basin was exceedingly dense and would likely limit access in the spring, summer, and fall.

The next area to be investigated was the 1.5 acre disposal site. This was located north of the water treatment plant. At this plant area, there appeared to be two areas involved. The first was apparently a diked basin due north of the treatment plant. This basin was in the low area beneath the treatment plant, and with little exception, appeared to be covered in kudzu and grasses. Very few roots appeared to extend into the waste material. The dikes appeared to be approximately 5 feet above the level of fill material. Approximately ten trees were located in this area, and twenty to thirty trees were observed in the perimeter. This entire area was in close proximity to the Tennessee River. A swimming area was noted in the slough. Drainage from the area is toward the Tennessee River and the topography slopes approximately 150 to 250 feet over a distance of about 100 feet. Three soil composites were taken in the area near the trees (RE-S01-LA). The samples were taken from a depth of approximately 6 to 12 inches. The second area of concern appeared to be a discharge pond for the treatment plant. This pond was located due west of the treatment plant, and approximately 6 inches of water was evident in this area. A discharge pipe was also noted, extending into this ponded area. Grasses

were noted to be present throughout the area; however, root systems were not evident. In addition, birds were noted to habitat the area. Three samples were taken at the water table in this area (RE-S02-SP). It was estimated that the diameter was approximately 75 yards across.

The sampling team next moved to the 2.6 acre disposal site. This area appeared to be entirely fenced with at least three gates evident. This area appeared to be a naturally low area on the plant site. Prior to taking the samples in the area, a background sample was taken. Immediately adjacent to this disposal area was a hill, which did not appear to have been used for any of the plant activities. No waste-like material was evident, and a sample was taken beneath the vegetation (RE-S07-AS). Initial inspection of this 2.6 acre site indicated that material similar to that seen in the other two disposal sites was evident across the entire area. This area also appeared to be diked and was covered in dried kudzu. A back hoe may have gone over some of the areas in this disposal site, as tire tracks were evident. Two carts of dissimilar material were potentially identified as silica from the furnaces. These were dumped down the side of the hill into the waste area. An abandoned tank, potentially propane, was noted at the top of the hill, as well as an empty metal explosives container. A Composite sample was taken along sparsely vegetated areas on the east side of this disposal area (RE-S05-LA). A small pile of material, dissimilar to the waste material, was included in the sample. The final sample taken in this disposal area was on the southern side of the disposal site. Inspection indicated that the material disposed here was similar to that encountered in other areas (RE-S06-LA). The inspection concluded approximately 1:15 p.m., when the sampling team left the site.

3.0 ENVIRONMENTAL SETTING

3.1 Topography

The Reynolds Metals facility lies in the Tennessee Valley. The land surface is characterized as rolling with a maximum relief of approximately 400 feet and an average altitude of about 600 feet. This area is generally a plateau of moderately even and relatively gentle slopes. Slopes exceeding 10 percent are uncommon on the average. The area in an around the Reynolds Metals facility is fairly flat with slopes less than 5 percent generally present across the area. As this is an industrialized section of the Muscle Shoals area, the plant has generally graded the land where necessary to provide slopes less than 1 percent.

3.2 Surface Waters

The ~~Alabama Reclamation~~ Southern Reclamation Company facility is bordered to the north by the Tennessee River. Several sloughs are located in close proximity to the northern most waste disposal area. This facility is located in close proximity to highly developed recreational waters, and the water supply intake is just a short distance downstream from the facility. The major surface water at this facility is the Tennessee River which lies within 4 miles to the north of the site. Wastewater from the Reynolds facilities is discharged to Pond Creek. ~~In addition,~~ approximately 2 miles to the west of the site is Spring Creek ~~which also~~ flows to the Tennessee River. Examination of flood plains in the area indicate that portions of the northern sections of the Reynolds facility are located in flood-prone areas. Approximately 4 miles to the southeast of the site is Haw Pond.

3.3 Geology and Soils

The [redacted] facility on Second Avenue is located in the Tennessee Valley District of the Highland Rim section of the Interior Low Plateau province of the Interior Plains geomorphic division. This area is characterized as a chert belt in the north with a limestone plain along the river. The areas in and around the Reynolds Metals facility appear to be mainly Ft. Payne Chert-Tuscumbia Limestone. The Ft. Payne Chert is reported to underlie all of Colbert County. However, in most parts of the county, it is covered by younger rocks. The formation crops out and is well exposed along the southern blocks of the Tennessee River valley and for short distances upstream along some of the major tributaries of the Tennessee River. Ft. Payne Chert in Colbert County consists of gray, light gray, and white crystalline hard limestone containing large quantities of chert which occurs as thick beds and as nodules which are disseminated throughout the limestone. The thickness of the Ft. Payne Chert and subsurface is comparatively uniform; it ranges from 162 to 207 feet and averages 186 feet. The formation is overlain conformably by the Tuscumbia Limestone and is underlain unconformably by the Chattanooga Shale. The Ft. Payne Chert is reportedly a good aquifer. The Tuscumbia Limestone underlays almost all of Colbert County as well. It crops out over large areas in the northern parts of the county. Exposures are common along the bluffs overlooking the Tennessee River and along the valleys and larger tributaries. The Tuscumbia Limestone is a light gray-to-gray, medium bedded, hard, dense, finely crystalline limestone. It contains considerable quantities of chert as nodules and thick beds. In most parts of the county, the formation has been deeply weathered to clay and less than 100 feet of limestone remains.

The predominant type of soil in this area is the Decatur-Dewey. As with most of the soils in the Limestone Valleys and Uplands, these soils are formed from weathering limestone. Topography is gently rolling with predominant slopes from 0-15 percent. The profile characteristics of Decatur soils are deep with dark brownish, loamy surface over a dark reddish, clay-like subsoil. These have moderate permeability and are well drained. Dewey series soils are also deep soils but with brownish, loamy surface over a reddish, clay-like subsoil. They are also moderate permeable and well drained. More than 75 percent of the land of this soil type is considered to prime farmland.

3.4 Groundwater

As was indicated above, both the Ft. Payne chert and Tuscumbia limestone are good aquifers in this area. Groundwater occurs in solution openings from fractures and bedding plains. These openings are best developed in areas such as Spring Creek valley which is to the south and west of the site. Wells in these formations can yield as much as 500 GPM per well. Tuscumbia Spring is the largest spring in Colbert County and one of the largest in Alabama. This spring discharges from Tuscumbia Limestone. This spring has a maximum discharge of about 70 MGD and a minimum discharge of about 6 MGD. This spring appears to be also southwest of the site. The U.S. Army Corps of Engineers owns a well in close proximity to the Reynolds facility. This well taps the Ft. Payne Chert-Tuscumbia Limestone aquifer and is reported to have artesian flow. In the same general vicinity of the site, the U.S. Government also owns a spring. This is known as TVA spring. The water-bearing formation in this case is Ft. Payne Chert. The Town of

Muscle Shoals has a well reportedly a depth 178 feet, also tapping Ft. Payne Chert. Tuscumbia limestone was tapped in a U.S. Geological Survey well at between 200 and 300 feet. Aquifer recharge in Colbert County occurs mainly in late fall, winter, and early spring. Movement of groundwater is generally northward toward the reservoirs formed by the Tennessee River. An Alabama Geological Survey publication for Colbert County indicates that in the winter and spring, when water levels are high and the rock openings are filled, rainfall results in rising water levels over a relatively short period of time. In the summer and fall, when water levels are low and rock openings have been drained, soil moisture has been depleted, and precipitation results in a more gradual rise of water levels--possibly no rise at all. Groundwater discharge consists mainly of evaporation from soil surfaces, transpiration from plant surfaces, discharge from springs, and pumpage from wells.

3.5 Climate and Meteorology

In general, Colbert County can be characterized as having a mild, humid climate. Most of the precipitation is in the form of rain, but snow generally occurs about twice a year. Freezing temperatures generally do not last more than two days. The highest average monthly precipitation generally occurs in March, and the lowest in September. More specifically, the Muscle Shoals area receives an annual precipitation of about 48 inches, at an annual evaporation rate of 33.8 inches for a net precipitation of 14.2 inches. The one-year 24-hour rainfall is reportedly 3.25 inches with a maximum 24-hour precipitation recorded at 7.8 inches. On a seasonal basis, the Muscle Shoals area receives a winter average of 15.6 inches, a spring average of 13.5 inches, a summer average of 10.4 inches, and a fall

average of 8.6 inches. The annual snowfall is reportedly 2.9 inches. Seasonal temperatures range from a winter average low of 42.9°F to a summer average of 78.9°F.

3.6 Land Use

The facility is bordered to the north by the Tennessee River. The Tennessee River is used for drinking water, hydroelectric power and recreation. The Tennessee Valley Authority (TVA) has a large power plant west of the facility and operates the Wilson Dam. Several major manufacturing operations are located also to the south of the facility. To the east of the facility, the area becomes mainly cropland and pastures. Residential areas are located along the Tennessee River backwaters both to the east and west of the facility. The Lakeview Heights subdivision is located within 0.1 miles south and east of the Alabama Reclamation facility. The Lakeview subdivision is located within 0.75 miles due west of the site. The population center of Muscle Shoals is approximately 5 miles west of the site. The Muscle Shoals Airport is located within 3 miles to the southwest.

3.7 Population Distribution

SRC

The Reynolds Metals facility is outside of the Muscle Shoals city limits. The area is primarily industrial with few residences evident. This area is greater than three miles from the population of Muscle Shoals. To the east of the site, the land use is primarily farmland and, therefore, is not highly populated. Approximately a mile and a half northwest of the site are two subdivisions--Lake View Highland and Steenson Hollow. Southwest of

the site is the Muscle Shoals Airport. There are few residences surrounding this area as well. It appears that the largest population affected by this site would be employees of the Reynolds Metals facility.

3.8 Water Supply

WRONG - MSC water

Reynolds Metals gets its drinking water supply from the Tennessee River. This water is treated at the Reynolds Metals reduction plant before being directed to the individual facilities. The city of Muscle Shoals uses the Tennessee River for its water source. Water supply records indicate that in the late 1950's and early 1960's, the city of Muscle Shoals had a groundwater well for public use. The status of this well is unknown at this time. Numerous springs are present in Colbert County. These springs are used for domestic stock and industrial needs.

3.9 Critical Environments/Endangered and Threatened Species

The Reynolds Metals facility does not lie in a critical habitat of an endangered species. The critical for the Alabama cave fish is approximately 10 miles northwest of the Reynolds Metals facility along the Tennessee River. The species of concern in this area are listed as follows:

Species Common Name	Range	Status
Gray Bat	Eastern 2/3 Alabama	Endangered Fed
Bald Eagle	Statewide	Endangered Fed
Golden Eagle	Statewide	Endangered Alabama
Peregrine Falcon	Statewide	Endangered Fed
Osprey	Statewide	Endangered Fed
Tuscumbia Darter	Springs of Tenn. River drainage system	Threatened Alabama
Alabama Cave Fish	Key Cave along Tenn. River	Critical habitat Alabama

4.0 WASTE TYPES AND QUANTITIES

4.1 Waste Quantities

No hazardous waste is currently being generated at this facility. In 1980, permit application for RCRA interim status indicated that K092 sludge was exposed on approximately 18 acres of land. It is unknown to what depth this material was present. Information in the AWIC files indicates that several earthen basins were present on this site. These ranged in depth from 8-12 feet.

4.2 Waste Disposal Methods and Locations

Air emissions control sludge was disposed in settling ponds on the plant site. This was done in order to meet the suspended solids requirement in their discharge permit. Four areas were observed at the plant site. The largest area is a 13.5 acre settling basin, which is located east of the manufacturing operations. This is shown on the topographic map. The next area is located to the west and slightly north the main manufacturing buildings. It is approximately 2.6 acres. The final two areas are located in the vicinity of the water treatment plant. One disposal area is located north of the plant, while the second area is located to the west of the plant. These comprise approximately 1.5 acres. With the exception of the basin west of the water treatment plant, each of these areas was indicated in the Part A application for the facility. The basin to the west of the water treatment plant was observed during the site investigation.

4.3. Waste Types

The Union Carbide facility generated emission control dust sludge from ferromanganese production. This was listed as K092 on the original RCRA regulations; however, by 1980, this was deleted from the listing. There are no other known hazardous wastes being generated at this facility.

5.0 LABORATORY DATA

5.1 Summary

Sample locations are described as follows:

Sample Number	Matrix	Description
RE-S01-LA	Waste	Composite from disposal area north of water treatment plant. Indicated size, 1.5 acres. Sample taken near the cluster of approximately ten trees.
RE-S02-LA	Waste	Composite from discharge pond west of water treatment plant. Sample taken at water table level.
RE-S03-SB	Waste	Composite of three holes in 13.5 acre settling basin area.
RE-S04-SB	Waste	Composite of waste material in 13.5 acre disposal site south of previous sample (RE-S03-SB).
RE-S05-LA	Waste	Composite on the east side of the 2.6 acre disposal area. A small pile of dissimilar material was included in this composite.
RE-S06-LA	Waste	Composite of typical waste material in 2.6 acre disposal site.
RE-S07-AS	Soil	Background sample taken on the top of the hill, immediately adjacent to the 2.6 acre disposal area.
RE-S08-LA	Waste	Field replicate of RE-S03-SB. Sample taken and composited along side the referenced sample. Each hole was within 2 feet of its replicate.

Sample results, as well as quality control information is presented in Exhibit 5.1. To summarize these results, cadmium and lead were found in concentrations greater than the background level (cadmium ranged from 4.7 to 7.1 mg/kg, as opposed to 0.9 mg/kg in the background. Lead ranged from 541 to 2,250 mg/kg, as opposed to 28.8 mg/kg in the background).

EP-toxicity leachate for these metals indicated only small amounts of cadmium were leachable (less than 0.1 mg/l). Leachable lead generally ranged in the vicinity of 0.7 mg/l. Background levels for chromium were approximately 23 mg/kg, The maximum determined concentration of any of the waste material was approximately 65 mg/kg. EP-toxicity leachate of these samples indicated a maximum leachable chromium of 0.07 mg/l. Total cyanide levels varied from a background range of 2.5 mg/kg to 11.5 mg/kg. These results averaged approximately 5 mg/kg.

5.2 Quality Assurance Review

All sample collection, sample preservation and chain-of-custody procedures used during this investigation were conducted in accordance with the standard operating procedures as specified in the Quality Control/Quality Assurance Plan for the Analytical and Environmental Division of Environmental Protection Systems, Inc., revised August 31, 1984. All laboratory analyses and quality assurance procedures used during this investigation were in accordance with standard procedures and protocols in the above specified document. Spiking levels and recovery data area attached in the analytical report presented in Exhibit 5.1. No suspect data or deviation from established protocol was noted.

6.0 TOXICOLOGICAL/CHEMICAL CHARACTERISTICS

Cadmium compounds had been given an overall SAX rating of 3 with the human inhalation TCLo:39 mg/m^3/20m. Cadmium has been reported as an experimental carcinogen with an oral toxicity of its compounds reportedly high. Fatal poisoning does not occur as a rule because the irritation and emetic action are so violent that little cadmium is absorbed. Cases of cadmium poisoning are generally as a result of ingestion of food or beverages prepared or stored in cadmium plated containers. The inhalation of fumes or dust of cadmium primarily affects the respiratory tract. Kidneys may also be affected.

Chromic acid salts are known to have a corrosive action on the skin and mucus membranes. Lesions are usually confined to the exposed parts of the body, chiefly the skin in the hands and forearms and the mucus membrane of the nasal septum. Chromate salts are experimental and human carcinogens of the lungs, nasal cavities, paranasal sinus, and also experimental carcinogens of the stomach and larnyx. Hexavalent chromium compounds are known to be more toxic than the trivalent.

Lead is a cumulative poison. Increasing amounts build up in the body, and eventually a point is reached where symptoms and disability occur. The lead produces a brittleness of red blood cells to which they hemolyze with but slight trauma; the hemoglobin is not affected. The presence of lead-bearing materials or lead compounds in industrial plants does not necessarily result in exposure on the part of workmen. The lead must be in such a form and so distributed as to gain entrance into the body or tissues in measurable quantities. Otherwise, no exposure can be said to exist. Three

modes of entry are reported into the body: (1) by inhalation of dust fumes, mists of vapors; (2) by ingestion of lead compounds trapped in the upper respiratory tract or introduced into the mouth on food, tobacco, fingers, or other objects; and (3) through the skin. This route is of special importance in the case of organic compounds of lead such as tetra ethyl lead. The toxicity of various lead compounds appears to depend on several factors: (1) the solubility of the compound in the body fluids; (2) the fineness of the particles of the compound; solubility is greater in proportion to the fine mist of the particles; (3) conditions under which the compound is being used.

7.0 CONCLUSIONS AND RECOMMENDATIONS

There are four distinct areas on the plant site where waste material is evident. The largest of these areas are located immediately to the east and immediately to the west of the plant manufacturing operations. The total area comprised in these disposal sites is approximately 18 acres. The 1.5 acre site located by the water treatment plant is actually two distinct areas. One is located north of this treatment plant and the other is located to the west of the treatment plant.

The following heavy metals were determined: cadmium, chromium, and lead. Of these, cadmium and lead were determined to be present in levels significantly higher than the background sample. Cadmium levels in this material ranged in the vicinity of 5 ppm. Leachable cadmium was determined to be present in quantities less than 0.1 mg/l. Analysis for total lead indicated its presence in concentrations ranging from 500 to 2,300 ppm. The largest concentrations of lead were found in the 13.5 and 2.6 acre disposal site. EP-toxicity analysis indicated leachable lead in quantities at approximately 0.7 mg/l. Each of the disposal areas appeared to be covered with vegetation. This vegetation was typified by kudzu and shallow root system plants. At this time, the depth of the disposal area is unknown. Past information indicates the approximate depths are from 8-12 feet. Although these areas are covered in vegetation, the acreage involved appears to be easily determined as material is evident at the surface. Further work is recommended in order to determine the depth of the material and whether the material at the base of the disposal site displays the characteristics of EP-toxicity. Any potential environmental impact is unknown at this time.

EXHIBITS

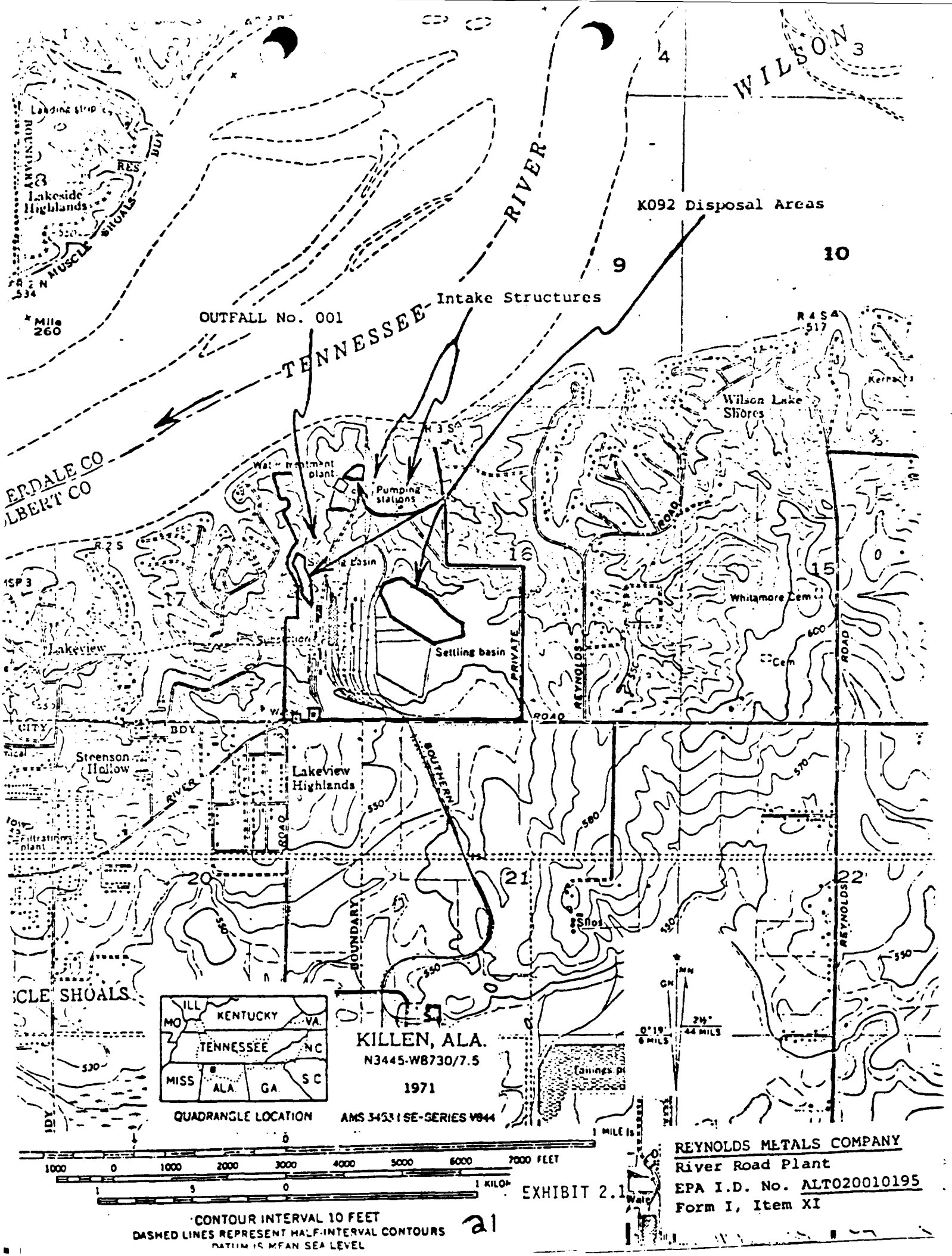

EXHIBIT 2.1

REYNOLDS METALS COMPANY
River Road Plant
EPA I.D. No. ALT020010195
Form I, Item XI

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EPA I.D. No. ALT020010195
Form 3, Item V.

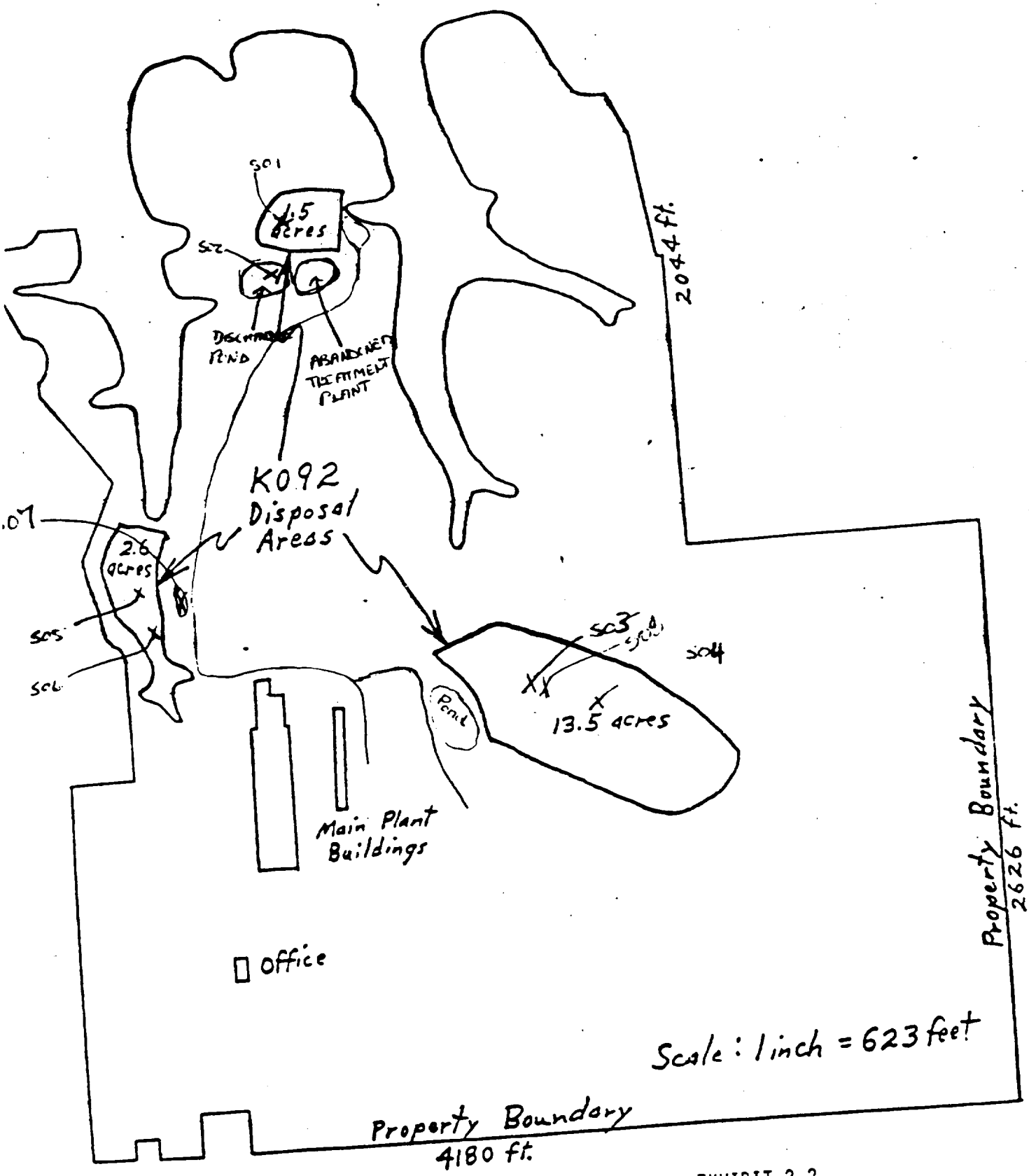

EXHIBIT 2.2

ENVIRONMENTAL PROTECTION SYSTEMS, INC.

P O Box 20382
106 Upton Dr
Jackson, Ms 39209
601 922-8242

7215 Pine Forest Rd
Pensacola Fl 32506
904 944-0301

ANALYTICAL REPORT

Date: March 12, 1985

Site: Reynolds Metals Company
River Road Plant
Muscle Shoals, Alabama

Matrix: Soil

Client: Alabama Department of Environmental Management

Date Received: January 18, 1985

EPS Lab No.	EPS Field Identification
85010282	RE-S01-LA
85010283	RE-S02-LA
85010284	RE-S03-SB
85010285	RE-S04-SB
85010286	RE-S05-LA
85010287	RE-S06-LA
85010288	RE-S07-AS
85010289	RE-S08-LA

Attached sheets list results of our analysis of above samples for: Cadmium, Chromium, Lead, and Cyanide

Analytical Reference No.: 85.1.355

EXHIBIT 5.1

Albert A. Johnston
Associate Director of Analytical Services

ENVIRONMENTAL PROTECTION SYSTEMS, INC.

P O Box 20382
106 Upton Dr
Jackson Ms 39209
601 922 8242

7215 Pine Forest Rd
Pensacola Fl 32506
904 944 0301

ANALYTICAL REPORT

Date: March 12, 1985

Site: Reynolds Metals Company
River Road Plant
Muscle Shoals, Alabama

Matrix: Soil

Client: Alabama Department of Environmental Management

Date Received: January 18, 1985

Spiking and Recovery Data

EPS Lab No. 85010290

Parameter	Spiking Level (ppm)	Percent (%) Recovery
Cadmium	5.0	100.7
Chromium	5.0	108.0
Lead	20.0	102.3
Cyanide	0.60	82.0

Herbert A. Johnston
Associate Director of Analytical Services

ENVIRONMENTAL PROTECTION SYSTEMS, INC.
P.O. Box 20382 • 180 Upson Drive • Jackson, MS 39209
Telephone: (601) 922-8242
7215 Pine Forest Road • Pensacola, FL 32506
Telephone: (904) 944-0301

LABORATORY REPORT

85.1.355 | 1/2

CLIENT: Alabama Dept. of Environmental Mgmt.
LOCATION: Montgomery, Alabama
DATE: 03/13/85
INVOICE NO.: To be invoiced/bp

COLLECTED BY: EPS (174)
DATE COLLECTED: 01/15/85
DATE RECEIVED: 01/18/85
DATE ANALYZED: 03/12/85

LABORATORY SAMPLE IDENTIFICATION

85010282 - RE - S01 - LA
85010283 - RE - S02 - LA
85010284 - RE - S03 - SB
85010285 - RE - S04 - SB

ANALYSES	IDENTIFICATION NUMBER 282	283	284	285
Cadmium, Total, mg/kg	5.5	5.5	7.1	5.0
Cadmium, "EP Toxicity" Leachate, mg/l	0.08	0.08	0.09	0.06
Chromium, Total, mg/kg	17.8	15.0	52.0	53.0
Chromium, "EP Toxicity" Leachate, mg/l	0.07	0.07	0.07	0.03
Lead, Total, mg/kg	813	541	1,230	1,570
Lead, "EP Toxicity" Leachate, mg/l	0.72	0.69	0.73	0.59
Cyanide, Total, mg/kg	4.8	5.9	7.9	11.5
"EP Toxicity" Extraction	yes	yes	yes	yes

COMMENT

Analyses conducted in accordance with 40 CFR, Part 261, May, 1980, Test Methods for Evaluating Solid Waste. Metal analysis reported on a dry weight basis. All samples collected under RCRA 3012 Program at Reynolds Metals Co., River Road Plant, Muscle Shoals, Alabama.

CERTIFICATION

Jennie K. White
MANAGER, CHEMICAL LABORATORY

Herbert A. Johnston
DIRECTOR, ANALYTICAL SERVICES

85

ENVIRONMENTAL PROTECTION SYSTEMS, INC.
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Telephone: (601) 922-8242
7215 Pine Forest Road • Pensacola, FL 32506
Telephone: (904) 944-0301

LABORATORY REPORT

85.1.355 | 2/2

CLIENT: Alabama Dept. of Environmental Mgmt.
LOCATION: Montgomery, Alabama
DATE: 03/13/85
INVOICE NO.: To be invoiced/bp

COLLECTED BY: EPS (174)
DATE COLLECTED: 01/15/85
DATE RECEIVED: 01/18/85
DATE ANALYZED: 03/12/85

LABORATORY SAMPLE IDENTIFICATION

85010286 - RE - S05 - LA
85010287 - RE - S06 - LA
85010288 - RE - S07 - AS
85010289 - RE - S08 - LA

ANALYSES	IDENTIFICATION NUMBER 286	287	288 ✓	289 ✓
Cadmium, Total, mg/kg	5.2	4.7	0.9	5.5
Cadmium, "EP Toxicity" Leachate, mg/l	0.09	0.02	0.01	0.08
Chromium, Total, mg/kg	25.7	52.5	22.8	64.6
Chromium, "EP Toxicity" Leachate, mg/l	0.04	<0.01	<0.01	0.06
Lead, Total, mg/kg	2,170	2,250	28.8	1,052
Lead, "EP Toxicity" Leachate, mg/l	0.71	0.15	<0.10	0.74
Cyanide, Total, mg/kg	1.2	8.4	2.5	4.4
"EP Toxicity" Extraction	yes	yes	yes	yes

COMMENT

Analyses conducted in accordance with 40 CFR, Part 261, May, 1980, Test Methods for Evaluating Solid Waste. Metal analysis reported on a dry weight basis. All samples collected under RCRA 3012 Program at Reynolds Metals Co., River Road Plant, Muscle Shoals, Alabama.

CERTIFICATION

Jeanie K. Whit
MANAGER, CHEMICAL LABORATORY

Herbert A. Johnston
DIRECTOR, ANALYTICAL SERVICES

CADMIUM COMPOUNDS

NIOSH #: EV 0260000

TOXICITY DATA: 3 CODEN:
ihl-hmn TCLo:1500 ug/m3/14Y-1:CARC ANYAA9 271,273,76

Toxicology Review: STEVA8 2(4),341,74. Occupational Exposure to Cadmium recm std: Air: TWA 40 ug/m3; CL 200 ug/m3/15M NTIS**.

THR: An exper CARC. The oral toxicity of Cd and its compounds is HIGH. However, when these materials are ingested, the irr and emetic action is so violent that little of the Cd is absorbed and fatal poisoning does not as a rule ensue. Cases of human Cd poisoning have been reported from ingestion of food or beverages prepared or stored in Cd-plated containers. The inhal of fumes or dusts of Cd primarily affects the respiratory tract; the kidneys may also be affected. Even brief exposure to high conc may result in pulmonary edema and death. Usually the edema is not massive, with little pleural effusion. In fatal cases, fatty degeneration of the liver and acute inflammatory changes in the kidneys have been noted. Ingestion of Cd results in a gastrointestinal type of poisoning resembling food poisoning in its symptoms. Inhal of dust or fumes may cause dryness of the throat, cough, headache, a sense of constriction in the chest, shortness of breath (dyspnea) and vomiting. More severe exposure results in marked lung changes, with persistent cough, pain in the chest, severe dyspnea and prostration which may terminate fatally. X-ray changes are usually similar to those seen in broncho-pneumonia. The urine is frequently dark. These symptoms are usually delayed for some hours after exposure, and fatal conc may be breathed without sufficient discomfort to warn the workman to leave the exposure. There is some evidence of teratogenicity. Ingestion of Cd results in sudden nausea, salivation, vomiting and diarrhea and abdominal pain and discomfort. Symptoms begin almost immediately after ingestion. A yellow discoloration of the teeth has been reported in workers exposed to Cd. Cadmium oxide fumes can cause metal fume fever resembling that caused by zinc oxide fumes.

CADMIUM DIAMIDE

mf: CdH_4N_2; mw: 144.45

Incomp: Self-explodes (water).

CADMIUM DIAZIDE

mf: CdN_6; mw: 196.44

Incomp: Explodes violently.

CADMIUM DICYANIDE

mf: C_2CdN_2; mw: 164.44

Incomp: Magnesium.

CADMIUM (II) EDTA COMPLEX

CAS RN: 15954913 NIOSH #: AH 4060000

SYN: (ETHYLENEDINITRILO)TETRAACETIC ACID CADMIUM (II) COMPLEX

TOXICITY DATA: 3 CODEN:
ipr-mus LD50:7800 ug(Cd)/kg PABIAQ 11,853,63

Occupational Exposure to Cadmium recm std: Air: TWA 40 ug/m3; CL 200 ug/m3/15M NTIS**.

THR: HIGH ipr. See also cadmium compounds.

Disaster Hazard: When heated to decomp it emits tox fumes of NO_x and Cd.

CADMIUM FLUOBORATE

CAS RN: 14486192 NIOSH #: EV 0525000
mf: B_2CdF_8; mw: 286.02

SYN: FLUOROBORATE

TOXICITY DATA: 3 CODEN:
orl-rat LDLo:250 mg/kg NCNSA6 5,27,53
ihl-mus LCLo:650 mg/m3/10M NDRC** No.9-4-1-19,44

Occupational Exposure to Cadmium recm std: Air: TWA 40 ug/m3; CL 200 ug/m3/15M NTIS**. Reported in EPA TSCA Inventory, 1980.

THR: HIGH orl. MOD ihl. See fluoborates.

Disaster Hazard: When heated to decomp it emits very tox fumes of Cd and F^-.

For further information see Fluoroborate Vol. 2, No. 3 of *DPIM Report.*

CADMIUM FLUORIDE

CAS RN: 7790796 NIOSH #: EV 0700000
mf: CdF_2; mw: 150.40

Cubic white crystals. mp: 1100°, bp: 1758°, d: 6.64, vap. press: 1 mm @ 1112°.

SYN: CADMIUM FLUORURE (FRENCH)

TOXICITY DATA: 3 CODEN:
scu-frg LDLo:280 mg/kg CRSBAW 124,133,37

Toxicology Review: AMSSAQ 400,5,63. OSHA Standard: Air: TWA 200 ug(Cd)/m3; CL 600 (SCP-W) FEREAC 39,23540,74. Occupational Exposure to Cadmium recm std: Air: TWA 40 ug/m3; CL 200 ug/m3/15M NTIS**. Reported in EPA TSCA Inventory, 1980.

THR: HIGH via scu route. Violent reaction with K. See fluorides and cadmium compounds.

Disaster Hazard: When heated to decomp it emits very tox fumes of Cd and F^-.

CADMIUM FLUOSILICATE

CAS RN: 17010218 NIOSH #: EV 0875000
mf: CdF_6Si; mw: 254.49

Hexagonal, colorless crystals.

SYN: TL 1070

TOXICITY DATA: 3 CODEN:
orl-rat LDLo:100 mg/kg NCNSA6 5,27,53
ihl-mus LCLo:670 mg/m3/10M NDRC** No.9-4-1-19,44

Occupational Exposure to Cadmium recm std: Air: TWA 40 ug/m3; CL 200 ug/m3/15M NTIS**.

EXHIBIT 6.0

TOXICITY DATA:
Currently tested by NTP for carcinogenesis by standard bioassay protocol as of December 1980.
THR: No data. Under CARC test.
Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

CADMIUM

CAS RN: 7440439 **NIOSH #: EU 9800000**
mf: Cd; mw: 112.40

Hexagonal crystals, silver-white malleable metal. mp: 320.9°, bp: 767 ± 2°, d: 8.642, vap. press: 1 mm @ 394°.

SYNS:
C.I. 77180 KADMIUM (GERMAN)

TOXICITY DATA: 3	CODEN:
ivn-rat TDLo:1250 ug/kg/(9D preg):TER	EVHPAZ 28,245,79
ipr-mus TDLo:2248 ug/kg/(8D preg):TER	TJADAB 13,33A,76
ivn-ham TDLo:2 mg/kg/(8D preg):TER	EXPEAM 25,56,69
ims-rat TDLo:45 mg/kg/4W-I:NEO	NCIUS* PH-43-64-886,SEPT,71
ims-rat TD:70 mg/kg:ETA	BJCAAI 18,124,64
ims-rat TD:63 mg/kg:ETA	NATUAS 193,592,62
ihl-man TCLo:88 ug/m3/8.6Y:SYS	AEHLAU 28,147,74
ihl-hmn LCLo:39 mg/m3/20M	AIHAAP 31,180,70
unk-man LDLo:15 mg/kg	ESDCAI 2,73,70
orl-rat LD50:225 mg/kg	TXAPA9 41,667,77
ipr-rat LD50:4 mg/kg	TXAPA9 41,667,77
scu-rat LD50:9 mg/kg	TXAPA9 41,667,77
ivn-rat LD50:3 mg/kg	TXAPA9 41,667,77
unk-rat LD50:712 mg/kg	GTPZAB 22(5),6,78
unk-mus LD50:636 mg/kg	GTPZAB 22(5),6,78
orl-rbt LDLo:70 mg/kg	AMPMAR 34,127,73
scu-rbt LDLo:6 mg/kg	PROTA* -,-,55
ims-ham LDLo:25 mg/kg	NCIUS* PH-43-64-886
cyt-ham:ovr 1 umol/L	CGCGBR 26,251,80
ipr-rat TDLo:1124 ug/kg (1D male)	TXAPA9 41,194,77
scu-rat TDLo:250 ug/kg (19D preg)	APTOD9 19,A122,80
orl-mus TDLo:448 mg/kg (MGN)	AEHLAU 23,102,71

Carcinogenic Determination: Animal Positive IARC** 2,74,73.
TLV: Air: 0.05 mg/m3 DTLVS* 4,59,80; TRBMAV 33(1),85,75; JDSCAE 58(12),1767,75; JFDSAZ 39,321,74; AMBOCX 3(2),55,74; QURBAW 7(1), 75,74; AEMBAP 40,239,73; NTIS** PB-221,198; KOTTAM 11(11),1300,75; FOREAE 7,313,42; STEVA8 2(4),341,74; FCTXAV 9,105,71; AJMEAZ 38,409,65; ENVRAL 4,71,71; 85CVA2 5,63,70; PEXTAR 12,102,69; PDTNBH 6,204,77; BNYMAM 54,413,78; AMTODM 3,209,77; GSAMAQ 123, 109,71. OSHA Standard: Air: TWA 200 ug/m3; CL 600 (SCP-W) FEREAC 39,23540,74. Occupational Exposure to Cadmium recm std: Air: TWA 40 ug/m3; CL 200 ug/m3/15M NTIS**. "NIOSH Manual of Analytical Methods" VOL 1 191,223,224, VOL 3 S312, S313, VOL 5 173#. Reported in EPA TSCA Inventory, 1980.
THR: MUT data. An exper TER, NEO, ETA, CARC. A human SYS. HIGH hmn ihl, unk. HIGH orl, ipr, scu, ivn, ims. MOD unk. See also cadmium compounds.
Fire Hazard: Mod, in the form of dust when exposed to heat or flame or by chemical reaction with oxidizing agents, metals, HN_3, Zn, Se and Te.
Explosion Hazard: Mod, in the form of dust when exposed to flame.
Disaster Hazard: Dangerous; cadmium dust can react vigorously with oxidizing materials.
For further information see Vol. 1, No. 1 and Vol. 3, No. 5 of *DPIM Report.*

CADMIUM (II) ACETATE

CAS RN: 543908 NIOSH #: EU 9810000
mf: $C_2H_4O_2 \cdot 1/2Cd$; mw: 116.25

Monoclinic colorless crystals, odor of acetic acid. mp: 256°, bp: decomp, d: 2.341.

SYNS:
BIS(ACETOXY)CADMIUM C.I. 77185
CADMIUM DIACETATE

TOXICITY DATA: 3	CODEN:
otr-ham:emb 1 umol/L	CNREA8 39,193,79
dnd-ham:emb 1 umol/L	CNREA8 39,193,79
ipr-mus LD50:14 mg/kg	TXAPA9 49,41,79
cyt-hmn:lym 10 nmol/L	MUREAV 85,236,81
ipr-rat TDLo:2371 ug/kg (14D preg)	BECTA6 20,206,78
ipr-rat TDLo:1 mg/kg (14D preg)	BECTA6 23,25,79
ipr-rat TDLo:2 mg/kg (20D preg)	BECTA6 23,25,79

Reported in EPA TSCA Inventory, 1980.
THR: MUT data. HIGH ipr. See also cadmium compounds.
Disaster Hazard: When heated to decomp it emits tox fumes of Cd.

CADMIUM BIS(2-ETHYLHEXYL) PHOSPHITE

CAS RN: 7495934 NIOSH #: TG 6475000
mf: $C_{32}H_{66}O_6P_2 \cdot Cd$; mw: 723.34

SYN: PHOSPHORUS ACID, BIS(2-ETHYLHEXYL) ESTER, CADMIUM SALT

TOXICITY DATA: 3	CODEN:
ipr-mus LDLo:250 mg/kg	CBCCT* 7,790,55

Occupational Exposure to Cadmium recm std: Air: TWA 40 ug/m3; CL 200 ug/m3/15M NTIS**.
THR: HIGH ipr. See also cadmium compounds.
Disaster Hazard: When heated to decomp it emits tox fumes of PO_x and Cd.

CADMIUM CAPRYLATE

CAS RN: 2191108 NIOSH #: RH 0370000
mf: $C_{16}H_{30}O_4 \cdot Cd$; mw: 398.86

SYN: OCTANOIC ACID, CADMIUM SALT (2:1)

TOXICITY DATA: 3-2	CODEN:
orl-rat LD50:950 mg/kg	JHEMA2 18,144,74
itr-rat LDLo:10 mg/kg	JHEMA2 18,144,74
orl-mus LD50:300 mg/kg	JHEMA2 18,144,74

Occupational Exposure to Cadmium recm std: Air: TWA 40 ug/m3; CL 200 ug/m3/15M NTIS**. Reported in EPA TSCA Inventory, 1980.

#: GB 2650000

;omp ● 250° to
r sol.

NHYDRIDE

EN:
AC 41,57018,76.
m std: Air: TWA
M NTIS**.
pounds and chro-
nd mu mem, can
"chrome holes."

:
; tetrahydronaph-
als; ammonia; ar-
yric acid; n,n-di-
de, peroxyformic
yanoferrate; pyri-

1 #: GB 2670000

DEN:
orrosive FEREAC
re to Cr(VI) recm
L 50 ug/m3/15M

o chromium com-

E

H #: GB 7280000

D
-CHROMIC CHLORIDE
:x

DEN:
NX* NX#03307

980.
compounds.
comp it emits tox

H #: GB 2850000

SYNS:
CHROMIC ACID, CHROMIUM (3+) SALT (3:2)
CHROMIUM CHROMATE

TOXICITY DATA: 3 CODEN:
imp-rat TDLo:112 mg/kg:NEO AIHAAP 20,274,59

Carcinogenic Determination: Animal Positive IARC** 2,100,73. Occupational Exposure to Chromium(VI) recm std: Air: CL 1 ug(Cr(VI))/m3 NTIS**. Reported in EPA TSCA Inventory, 1980.
THR: An exper NEO, CARC. See also chromium compounds. Very powerful oxidizer.

CHROMITE (MINERAL)

CAS RN: 1308312 NIOSH #: GB 4000000
mf: Cr_2FeO_4; mw: 223.85

SYNS:
CHROME ORE
CHROMITE ORE
IRON CHROMITE

TOXICITY DATA: 3 CODEN:
Carcinogenic Determination: Indefinite IARC** 23,205,80.
THR: See also chromium compounds and iron. An exper ± CARC.

CHROMIUM

CAS RN: 7440473 NIOSH #: GB 4200000
af: Cr; aw: 52.0

SYN: CHROME

TOXICITY DATA:	CODEN:
ivn-rat TDLo:2100 ug/kg/6W-I TFX:ETA	JNCIAM 16,447,55
imp-rat TDLo:1200 ug/kg/6W-I TFX:ETA	JNCIAM 16,447,55
imp-rbt TDLo:75 mg/kg:ETA	ZEKBAI 52,425,42

Carcinogenic Determination: Animal Suspected IARC** 2,100,73; Animal Indefinite IARC** 23,205,80. TLV: TWA 500 ug/m3 DTLVS* 4,98,80. *Toxicology Review*: 85CVA2 5,63,70; KOTTAM 11(11),1300,75; FO REAE 7,313,42; MIBUBI 9(4),321,75; FCTXA 9,105,71; PEXTAR 12,102,69, 85DHAX Cr,22,7 BNYMAM 54,413,78; NTIS** Conf-491001. OSH Standard: Air: TWA 1 mg/m3 (SCP-0) FEREA 39,23540,74. "NIOSH Manual of Analytical Method VOL 1 152,182, VOL 3, S323,352, VOL 5 173 NIOSH Current Intelligence Bulletin 4, 1975. Reported in EPA TSCA Inventory, 1980. Proposed OSHA Medical Records Rules FEREAC 47,30420,82.
THR: An exper ETA. CARC.
Disaster Hazard: Powder will explode spont in air.
Incomp: Oxidants.
For further information see Vol. 3, No. 3 of *DPIM Re*

CHROMIUM ACETATE HYDRATE

CAS RN: 628524 NIOSH #: AG 300
mf: $C_4H_6CrO_4 \cdot H_2O$; mw: 188.12

Red crystals.

SYNS:
ACETIC ACID, CHROMIUM(2+) SALT
CHROMIUM(2+) ACETATE
CHROMIUM(II) ACETATE
CHROMIUM DIACETATE
CHROMOUS ACETATE

TOXICITY DATA: 1 CODEN:
orl-rat LD50:11260 mg/kg AIHAAP 30,470,69

Reported in EPA TSCA Inventory, 1980.
THR: LOW orl. See also chromium compounds.
Disaster Hazard: When heated to decomp it emits acrid smoke and irr fumes.

CHROMIUM(III) CHLORIDE

CAS RN: 10025737 NIOSH #: GB 5425000
mf: Cl_3Cr; mw: 158.36

Bp: 1300° (subl)

SYNS:
CHROMIC CHLORIDE
CHROMIUM CHLORIDE, ANHYDROUS
CHROMIUM CHLORIDE
CHROMIUM TRICHLORIDE
C.I. 77295
PURATRONIC CHROMIUM CHLORIDE
TRICHLOROCHROMIUM

MUTAGEN DATA: 3	CODEN:
mrd-esc 5 mmol/L	CNREA8 40,2455,80
cyt-hmn:fbr 100 umol/L	CARYAB 32,379,79
cyt-hmn:ovr 50 ug/L	CARYAB 32,379,79

REPRODUCTIVE EFFECTS DATA:	
ipr-rat TDLo:12066 ug/kg (1D male)	JRPFA4 7,21,64
ipr-mus TDLo:44600 ug/kg (8D preg)	JTSCDR 2,1,76
ipr-mus TDLo:30 mg/kg (8D preg)	JTSCDR 2,1,76
ipr-mus TDLo:59500 ug/kg (9D preg)	JTSCDR 2,1,76
ivn-mus TDLo:450 mg/kg (1-17D preg)	TJADAB 12,198,75
ivn-mus TDLo:12066 ug/kg (30D male)	JRPFA4 7,21,64

TOXICITY DATA:	CODEN:
orl-rat LD50 1870 mg/kg	AIHAAP 30,470,69
ipr-mus LD50 140 mg/kg	CODEAF 256,1043,63
ivn-mus LDLo 400 mg/kg	AQMOAC #70-15,1970
ivn-rbt LDLo 200 mg/kg	EQSSDX 1,1,75
ivn-gpg LDLo 202 mg/kg	AEHLAU 11,201,65
ipr-gpg LDLo 200 mg/kg	AEHLAU 11,201,65

Toxicology Review: 85DHAX Cr,22,74. Reported in EPA TSCA Inventory, 1980. Meets Criteria for Proposed OSHA Medical Records Rule FEREAC 47,30420,82.
THR: HIGH dermal; MOD orl. Violent reaction with Li, nitrogen.
Disaster Hazard: When heated to decomp it emits tox fumes of Cl^-.

CHROMIUM COMPOUNDS

Chromic acid and its salts have a corrosive action on the skin and mu mem. The lesions are confined to the exposed parts, affecting chiefly the skin of the hands and forearms and the mu mem of the nasal septum. The characteristic lesion is a deep, penetrating ulcer, which, for the most part, does not tend to suppurate, and which is slow in healing.

Small ulcers, about the size of a matchhead or end of a lead pencil may be found, chiefly around the base

of the nails, on the knuckles, dorsum of the hands and forearms. These ulcers tend to be clean, and progress slowly. They are frequently painless, even though quite deep. They heal slowly, and leave scars. On the mu mem of the nasal septum the ulcers are usually accompanied by purulent discharge and crusting. If exposure continues, perforation of the nasal septum may result, but produces no deformity of the nose. Chromate salts are exper and hmn CARC of the lungs, nasal cavity and paranasal sinus, also exper CARC of the stomach and larynx. Hexavalent compounds are said to be more toxic than the trivalent. Eczematous dermatitis due to trivalent chromium compounds has been reported.

CHROMIUM DIACETATE

CAS RN: 628524 NIOSH #: AG 3000000
mf: $C_4H_6CrO_4$; mw: 170.09

SYNS:
ACETIC ACID, CHROMIUM (2+) SALT (8CI,9CI)
CHROMIUM ACETATE HYDRATE
CHROMIUM (2+) ACETATE
CHROMIUM (II) ACETATE
CHROMOUS ACETATE

TOXICITY DATA: 1 CODEN:
orl-rat LD50:11260 mg/kg AIHAAP 30,470,69

THR: LOW orl. See also chromium compounds.
Disaster Hazard: Ignites spont in air.

CHROMIUM(VI) OXIDE (1:3)

CAS RN: 1333820 NIOSH #: GB 6650000
mf: CrO_3; mw: 100.00

Red rhomb, deliq cryst.; d: 2.70; mp: 196°; bp: decomp sol = 61.7 g/100 cc @ 0°; 67.45 g/100 cc @ 100°.

SYNS:
ANHYDRIDE CHROMIQUE (FRENCH)
ANIDRIDE CROMICA (ITALIAN)
CHROME (TRIOXYDE DE) (FRENCH)
CHROMIC ACID; CHROMIC (VI) ACID
CHROMIC ACID, SOLID; CHROMIC ACID, SOLID (DOT)
CHROMIC ANHYDRIDE
CHROMIC ANHYDRIDE (DOT)
CHROMIC TRIOXIDE; CHROMIC TRIOXIDE (DOT)
CHROMIUM OXIDE; CHROMIUM (VI) OXIDE
CHROMIUM TRIOXIDE
CHROMIUM (6+) TRIOXID
CHROMSAEUREANHYDRID (GERMAN)
CHROMTRIOXID (GERMAN)
CHROOMTRIOXYDE (DUTCH)
CHROOMZUURANHYDRIDE (DUTCH)
CROMO (TRIOSSIDO DI) (ITALIAN)
MONOCHROMIUM OXIDE)
MONOCHROMIUM TRIOXIDE
PURATRONIC CHROMIUM TRIOXIDE

TOXICITY DATA:	CODEN:
mmo-sat 1 mmol/L	TOLED5 8,195,81
mma-sat 10 ug/plate	AEMIDF 33,805,77
dnd-esc 5 mmol/L	CNREA8 40,2455,80
mrc-bsc 16 mmol/L	MUREAV 58,175,78
cyt-mam:mmal umol/L/48H	MUREAV 67,221,79
cyt-ham:emb 3500 ug/L/24H	MUREAV 46,87,77
cyt-ham:ovr 250 ug/L	TXCYAC 17,219,80
sce-ham:ovr 250 ug/L	TXCYAC 17,219,80
ivn-ham TDLo:5 mg/kg (8D preg)	ENVRAL 16,101,78
ivn-ham TDLo:7500 ug/kg (8D preg)	ENVRAL 16,101,78
ivn-ham TDLo:7500 ug/kg (8D preg)	TJADAB 9,A17,74
ihl-ham TCLo:110 ug/m³ CAR	AGGHAR 13,528,55
imp-rat TDLo:125 mg/kg:CAR	AIHAAP 20,274,59
oro-dog LDLo 330 mg/kg	27ZWAY 3,3,1521

TOXICITY DATA: CODEN:
mma-sal 25 ug/plate TOLEDS 3,325,79

THR: MUT data.
Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

LAVENDER ABSOLUTE

NIOSH #: OF 6100000

Found in the flowers of Lavandula Officinalis chaix. The main constituent is Linalyl Acetate; prepared from alcoholic extract of a residue, which is extracted from plant material using an organic solvent; a dark green liquid.

TOXICITY DATA: 1 CODEN:
skn-rbt 500 mg/24H MLD FCTXAV 14,443,76
orl-rat LD50:4250 mg/kg FCTXAV 14(5),443,76

THR: LOW orl; A skn irr.
Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

LAVENDER OIL

CAS RN: 8000280 NIOSH #: OF 6110000

Main constituent is linalyl acetate. Found in the plant Lavandulaofficinalif choix (Fam. Labiate). Prepared by steam distillation of the flowering stalks of the plant.

SYNS:
LAVENDEL OEL (GERMAN) OIL OF LAVENDER

TOXICITY DATA: 1 CODEN:
skn-rbt 500 mg/24H MLD FCTXAV 14,443,76
orl-rat LD50:9040 mg/kg PHARAT 14,435,59

Reported in EPA TSCA Inventory, 1980.
THR: LOW orl. A skn irr.
Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

LD-813

CAS RN: 64083052 NIOSH #: OF 6730000

Commercial mixture of aromatic amines containing approx. 40% MOCA

TOXICITY DATA: 3 CODEN:
orl-rat TDLo:37 gm/kg/2Y-C:CARC TXAPA9 31,159,75

THR: An exper CARC. See also aromatic amines.
Disaster Hazard: When heated to decomp it emits toxic fumes of NO_x.

LEAD

CAS RN: 7439921 NIOSH #: OF 7525000
mf: Pb; mw: 207.19

Bluish-gray, soft metal. mp: 327.43°, bp: 1740°, d: 11.34 @ 20°/4°. vap. press: 1 mm @ 973°.

SYNS:
C.I. 77575
LEAD FLAKE
LEAD S2
OLOW (POLISH)

TOXICITY DATA: 3 CODEN:
TDLo:790 mg/kg (MGN) AEHLAU 23,102,71
TDLo:1140 mg/kg (14D pre-post) PHMCAA 20,201,78
TDLo:1120 mg/kg (MGN) AEHLAU 23,102,71
TDLo:6300 mg/kg (1-21D EXPEAM 31,1312,75
TDLo:12600 mg/kg (1-21D EXPEAM 31,1312,75
TDLo:4800 mg/kg (1-16D BECTA6 18,271,77
TDLo:50 mg/kg/(8D TER EXPEAM 25,56,69
TDLo:662 mg/kg (1-21W TXAPA9 25,466,73
TDLo:50 mg/kg/(8D TER EXPEAM 25,56,69
TDLo:450 mg/kg/6Y:CNS JAMAAP 237,2627,77
LDLo:1000 mg/kg EQSSDX 1,1,75
LDLo:160 mg/kg HBAMAK 4,1289,35

Carcinogenic Determination: Indefinite IARC** 23, 325,80.
TLV: AIR: 0.15 mg/m3 DTLVS* 4,243,80; *Toxicology Review:* TRBMAV 33(1),85,75; PGMJAO 1(601),783,75; JDSCAE 58(12),1767,75; IRXPAT 12,1,73; CTPHBG 55,147,71; CTOXAO 6(3),377,73; CURBAW 7(1),75,74; RREVAH 54,55,75; JAVMA4 164(3),277,74; AEMBAP 40,239,73; CTOXAO 5(2),151,72; FOREAE 7,313,42; KOTTAM 1(11),1300,75; GEIGAI 20(3),291,73; STEVA8 4,341,74; CLCHAU 19,361,73; AJMEAZ 38,409,65; 85DHAX PB,254,72; PDTNBH 6,204,77; AMTODM 209,77. OSHA Standard: Air: TWA 200 ug/m3 (SCP-O) FEREAC 39,23540,74. Occupational Exposure to Inorganic Lead recm std: Air: TWA 0.10 mg(Pb)/m3 NTIS**. "NIOSH Manual of Analytical Methods" VOL 1 102,191,195,200,208,214,262, VOL 3 S341. Reported in EPA TSCA Inventory, 1980.
THR: See lead compounds. A hmn CNS. HIGH orl; MOD irr. A common air contaminant. It is a ± CAR of the lungs and kidney and an exper TER.
Fire Hazard: Mod, in the form of dust when exposed to heat or flame. See also powdered metals.
Explosion Hazard: Mod, in the form of dust when exposed to heat or flame.
Incomp: NH_4NO_3, ClF_3, H_2O_2, NaN_3, Na_2C_2, Zr. disodium acetylide; oxidants.
Disaster Hazard: Dangerous; when heated, emits highly toxic fumes; can react vigorously with oxidizing materials.
For further information see Vol. 1, No. 1 of *DPIM Report.*

LEAD ACETATE

CAS RN: 301042 NIOSH #: AI 5250000
mf: $C_4H_6O_4 \cdot Pb$; mw: 325.29

Trihydrate, colorless crystals or white granules or powder. Slightly acetic odor; slowly effloresces; d: 2.55; mp: 75° when rapidly heated. Decomp above 200°; very sol in glycerol. Keep well closed.

SYNS:
ACETIC ACID LEAD (2+) SALT
ACETATE DE PLOMB (FRENCH)
BLEIACETAT (GERMAN)
LEAD (2+) ACETATE
LEAD(II) ACETATE
LEAD DIACETATE
LEAD DIBASIC ACETATE
NORMAL LEAD ACETATE
PLUMBOUS ACETATE
SALT OF SATURN
SUGAR OF LEAD

TOXICITY DATA: 3 CODEN:
dns-rat-ipr 50 ug/kg PSEBAA 143,446,73
spm-mus-par 1 gm/kg ARTODN 46,159,80
orl-rat TDLo:7854 mg/kg (6-16D preg) FCTXAV 13,629,75
orl-rat TDLo:1800 mg/kg (1-22D preg/14D post) TOLEDS 7,373,80
orl-rat TDLo:113 gm/kg (70D pre-21D post) PBBHAU 8,347,78
orl-mus TDLo:3150 mg/kg (1-21D preg) CRSBAW 170,1319,76
orl-mus TDLo:4800 mg/kg (1-8D preg) CRSBAW 172,1037,78
orl-mus TDLo:9 gm/kg (7-21D preg) CRSBAW 170,1319,76
ipr-mus TDLo:35 mg/kg (8D preg) BIMDB3 30,223,79
ivn-ham TDLo:50 mg/kg/(8D preg):TER EXMPA6 7,208,67
ivn-ham TDLo:50 mg/kg (8D preg) EXPEAM 25,56,69
ipr-pgn LDLo:150 mg/kg ARTODN 46,265,80
cyt-hmn:lym 1 mmol/L/24H TXCYAC 10,67,78
cyt-mus-orl 16800 mg/kg/4W JTEHD6 2,619,77
cyt-mky-orl 5760 mg/kg/64W MUREAV 45,77,77
ipr-mus TDLo:15 mg/kg/(8D preg):TER BIMDB3 30,223,79
ivn-ham TDLo:50 mg/kg/(8D preg):TER EXMPA6 7,208,67
orl-rat TDLo:250 gm/kg/47W-C:ETA BJCAAI 16,283,62
ipr-rat LDLo:204 mg/kg JPETAB 38,161,30
ipr-mus LD50:120 mg/kg COREAF 256,1043,63
orl-dog LDLo:300 mg/kg HBAMAK 4,1289,35
scu-dog LDLo:80 mg/kg HBAMAK 4,1289,35
ivn-dog LDLo:300 mg/kg EQSSDX 1,1,75
scu-cat LDLo:100 mg/kg HBAMAK 4,1289,35
scu-rbt LDLo:300 mg/kg HBAMAK 4,1289,35
ivn-rbt LDLo:50 mg/kg EQSSDX 1,1,75
scu-frg LDLo:1600 mg/kg HBAMAK 4,1289,35

Carcinogenic Determination: Animal Positive IARC** 23,325,80; Human Suspected IARC** 23,325,80. *Toxicology Review:* ADTEAS 5,51,72; ENVRAL 13,36,77; 85DHAX Pb,256,72. OSHA Standard: Air: TWA 200 ug(Pb)/m3 (SCP-O) FEREAC 29,23540,74. Occupational Exposure to Inorganic Lead recm std: Air: TWA 0.10 mg(Pb)/m3 NTIS**. Reported in EPA TSCA Inventory, 1980.
THR: MUT data. An exper + CARC, TER, ETA. A susp hmn CARC; HIGH ipr, orl, scu, ivn. See also lead compounds. A poison. An insecticide.
Disaster Hazard: When heated to decomp it emits toxic fumes of Pb.
Incomp: $KBrO_3$; acids, sol sulfates, citrates, tartrates, chlorides, carbonates, alkalies, tannin phosphates, resorcinol, salicylic acid, phenol, chloral hydrate, sulfites, vegetable infusions, tinctures.
For further information see Vol. 1, No. 4 of *DPIM Report.*

LEAD ACETATE, BASIC

CAS RN: 1335326 NIOSH #: OF 8750000
mf: $C_4H_{10}O_8Pb_3$; mw: 807.71

30

SYNS:
CYANSAN SAN-CYAN

TOXICITY DATA: 3 CODEN:
orl-hmn TDLo:5400 mg/kg/24W:EYE AROPAW 94,927,76
ims-rat LD50:310 mg/kg BJPCAL 1,186,46
orl-mus LDLo:4 mg/kg APFRAD 19,740,61

Reported in EPA TSCA Inventory, 1980.

THR: Toxic to eye in hmn via orl. HIGH ims, orl. See also cyanates.

Disaster Hazard: When heated to decomp it emits very tox fumes of CN^- and Na_2O.

CYANIDE

CAS RN: 57125 NIOSH #: GS 7175000
mf: CN^-; mw: 26.02

SYN: CYANURE (FRENCH)

TOXICITY DATA: 3 CODEN:
ipr-mus LD50:3 mg/kg NATUAS 228,1315,70

TLV: Air: 5 mg/m3 DTLVS* 4,109,80. *Toxicology Review:* CLCHAU 19,361,73. "NIOSH Manual of Analytical Methods" VOL 1 116, VOL 3 S250. Reported in EPA TSCA Inventory, 1980.

THR: Cyanide directly stimulates the chemoreceptors of the carotid and aortic bodies with a resultant hyperpnea. Cardiac irregularities are often noted, but the heart invariably outlasts the respirations. Death is due to respiratory arrest of central origin. It can occur within seconds or minutes of the inhalation of high concentrations of hydrogen cyanide gas. Because of slower absorption, death may be more delayed after the ingestion of cyanide salts, but the critical events still occur within the first hour.

Two other sources of cyanide have been responsible for human poisoning. One of these is amygdalin, a cyanogenic glycoside found in apricot, peach, and similar fruit pits and in sweet almonds. Amygdalin is a chemical combination of glucose, benzaldehyde, and cyanide from which the latter can be released by the action of β-glucosidase or emulsin. Although these enzymes are not found in mammalian tissues, the human intestinal microflora appears to possess these or similar enzymes capable of effecting cyanide release resulting in human poisoning. For this reason amygdalin may be as much as 40 times more toxic by the oral route as compared with intravenous injection. Amygdalin is the major ingredient of Laetrile, and this alleged anticancer drug has also been responsible for human cyanide poisoning. An ethical drug that may also cause cyanide poisoning in overdose is the potent vascular smooth muscle relaxant sodium nitroprusside. Although nitroprusside is related chemically to ferricyanide, unlike the latter it penetrates into erythrocytes and reacts with hemoglobin to release its cyanide (Smith and Kruszyna, 1974). Fortunately, the therapeutic margin for nitroprusside appears to be quite large.

Cyanide is commonly found in certain rat and pest poisons, silver and metal polishes, photographic solutions, and fumigating products. Compounds such as potassium cyanide can also be readily purchased from chemical stores. Cyanide is readily absorbed from all routes, including the skin, mu mem, and by inhal, although alkali salts of cyanide are toxic only when ingested. Death may occur with ingestion of even small amounts of sodium or potassium cyanide and can occur within minutes or hours depending on route of exposure. Inhalation of toxic fumes represents a potentially rapidly fatal type of exposure. Sodium nitroprusside (Smith and Kruszyna, 1974) and apricot seeds (Sayre and Kaymakcalan, 1964) have also caused cyanide poisoning. A blood cyanide level of greater than 0.2 μg/ml is considered toxic. Lethal cases have usually had levels above 1 μg/ml. Clinically, cyanide poisoning is reported to produce a bitter, almond odor on the breath of the patient; however, only a small proportion of the population is genetically able to discern this characteristic odor. Typically, cyanide has a bitter, burning taste, and following poisoning, symptoms of salivation, nausea without vomiting, anxiety, confusion, vertigo, giddiness, lower jaw stiffness, convulsions, opisthotonos, paralysis, coma, cardiac arrhythmias, and transient respiratory stimulation followed by respiratory failure may occur. Bradycardia is a common finding, but in most cases heartbeat usually outlasts respiration (Wexler et al., 1947). A prolonged expiratory phase is considered to be characteristic of cyanide poisoning.* The volatile cyanides resemble hydrocyanic acid physiologically, inhibiting tissue oxidation and causing death through asphyxia. Cyanogen is probably as toxic as hydrocyanic acid; the nitriles are generally considered somewhat less toxic, probably because of their lower volatility. The non-volatile cyanide salts appear to be relatively non-toxic systemically, so long as they are not ingested and care is taken to prevent the formation of hydrocyanic acid. Workers, such as electroplaters and picklers, who are daily exposed to cyanide solutions may develop a "cyanide" rash, characterized by itching, and by macular, papular, and vesicular eruptions. Frequently there is secondary infection. Exposure to small amounts of cyanide compounds over long periods of time is reported to cause loss of appetite, headache, weakness, nausea, dizziness, and symptoms of irr of the upper respiratory tract and eyes. See also specific compounds.

Fire Hazard: Mod, by chemical reaction with heat, moisture, acid. Many cyanides evolve hydrocyanic acid rather easily. This is a flam gas and is highly toxic. Carbon dioxide from the air is sufficiently acidic to liberate hydrocyanic acid from cyanide solutions. See also hydrocyanic acid.

Explosion Hazard: See hydrocyanic acid. Explodes if melted with nitrite or chlorate @ about 450°. Violent reaction with F_2, Mg, nitrates, HNO_3, nitrites.

Disaster Hazard: Dangerous; on contact with acid, acid

* Casarett and Doull's, "Toxicology, the basic Science of Poisons" 2nd ed. Doull, Klaassen and Amdur (eds). Macmillan Pub. Co. Inc. New York, N.Y.

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REFERENCES

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ENVIRONMENTAL PROTECTION SYSTEMS, INC.

Alabama RCRA 3012 Site Ranking Scheme
EPS Form 3012-V

Site Name ALABAMA RECLAMATION
Site Number ALD006652693

Site Inspection Ranking Scheme

(Select one answer for each of the following seven questions)

1. Are Hazardous Substances Present?		
A. Confirmed on site!	10 points	
B. Suspected at site!	5 points	X
C. It is unknown!	2 points	
D. No hazardous substances	0 points	
E. RCRA facility only!	0 points	
2. Is There a Pollution Dispersal Pathway?		
A. Direct to surface and/or groundwater.	5 points	
B. Indirect to surface and/or groundwater.	4 points	
C. Suspected to surface and/or groundwater.	3 points	X
D. Not known for sure.	2 points	
E. No pathway.	0 points	
3. Characteristics of Human Population?		
A. High density.	5 points	
B. Medium density.	4 points	
C. Low density.	3 points	X
D. No population.	2 points	
4. Characteristics of Natural Environment?		
A. Critical habitat including endangered species, etc.	5 points	
B. Sensitive habitat.	3 points	
C. Common less sensitive habitat.	2 points	X
5. How is Human Population Affected By Site?		
A. Public utility of drinking water from site.	5 points	
B. Direct public access to site.	4 points	
C. Public access to affected surface water.	3 points	X
D. Only potential for human population contact.	2 points	
E. Low or no potential for contact.	1 point	
6. Facility Management Practices at Site?		
A. Site actively supervised and managed currently with monitoring reports and other permit and report requirements.	1 point	X
B. Site inadequately managed records not up-to-date.	3 points	

C. Site not currently managed or regulated. — 4 points _____

D. Abandon site. — 5 points _____

7. Potential Responsible Parties for Site Operations?

A. Controlling party identified and accepts responsibility for site. — 1 point X

B. Suspected controlling party identified but does not accept responsibility for site. — 4 points _____

C. No responsible party available. — 5 points _____

Ranking Score =

$$\frac{5}{\#1} \times \left[\frac{3}{\#2} + \frac{2}{\#4} + \left(\frac{3}{\#3} \times \frac{3}{\#5} \right) + \frac{1}{\#6} + \frac{1}{\#7} \right]$$

TABLE 1. Ranking Assessment

NUMERICAL RANGE	PRIORITY ASSESSMENT
0-50	NONE
50-150	LOW
150-300	MEDIUM
300-450	HIGH

Ranking Score: 80

Priority Assessment: LOW

ENVIRONMENTAL PROTECTION SYSTEMS, INC.
RCRA 3012
SITE SAFETY PLAN

A. GENERAL INFORMATION

SITE: Reynolds Metals Co. - River Road Plant EPA NO.: ALD000652693

LOCATION: River Road, Muscle Shoals, AL

PLAN PREPARED BY: L. W. Warren DATE: 11/19/84
APPROVED BY: E. Corbin McGriff, Jr. DATE: 11/26/84
E. Corbin McGriff, Jr., Ph.D., P.E.

OBJECTIVE(S): To collect environmental samples and waste samples on and around site to characterize any hazardous materials present.

PROPOSED DATE OF INVESTIGATION: December 1984

BACKGROUND REVIEW: Complete: X Preliminary: ___

DOCUMENTATION/SUMMARY: OVERALL HAZARD: Serious: ___ Moderate: ___
Low: X Unknown: ___

B. SITE/WASTE CHARACTERISTICS

Need sludge throughout report!

WASTE TYPE(S): Liquid: ___ Solid: X Sludge: ___ Gas: ___

CHARACTERISTICS: Corrosive: ___ Ignitable: ___ Radioactive: ___ Volatile:
Toxic: X Reactive: ___ Unknown: ___
Other (Name): ___

FACILITY DESCRIPTION: Facility was involved in manufacture of ferromanganese alloys.

Principal Disposal Method (type and location): Three disposal areas reported at the site.

Unusual Features (dike integrity, power lines, terrain, etc.):

Status: (active, inactive, unknown) Inactive

History: (Worker or non-worker injury; complaints from public: previous agency action):

C. HAZARD EVALUATION

Hazard evaluation is low. Ferromanganese emission control dust sludge disposed in three areas on site. Cyanide used at one time at faciltiy. Records indicate cyanide destruction techniques used since operations began.

D. SITE SAFETY WORK PLAN

PERIMETER ESTABLISHMENT: Map/Sketch Attached X Site Secured? ___

Perimeter Identified? ___ Zone(s) of Contamination Identified? ___

PERSONAL PROTECTION

Level of Protection A ___ B ___ C ___ D X

Modifications:

Surveillance Equipment and Materials: Boring device, hard hats, gloves, boots.

DECONTAMINATION PROCEDURES: Dispose of contaminated boots and gloves.

Special Equipment, Facilities, or Procedures:

SITE ENTRY PROCEDURES: Permission of owner/operator should be obtained before entry.

Team Member	Responsibility

WORK LIMITATIONS (Time of day, etc.): Daylight hours

INVESTIGATION-DERIVED MATERIAL DISPOSAL: Samples will be sent to the laboratory for analysis. Samples will then be disposed of by the laboratory.

E. EMERGENCY INFORMATION

LOCAL RESOURCES

Ambulance: 386-4000 or 766-8600
Hospital or Emergency Room: 383-7441 Humana Hospital Shoals
Poison Control Center: 1-800-462-0800
Police: 383-1771
Fire Department: 383-1512
Airport:
Explosives Unit:
EPA Contact: Ms. Camilla Warren, Region IV 404/881-2234

SITE RESOURCES

Water Supply:
Telephone:
Radio:
Other:

EMERGENCY CONTACTS

Mr. Dan Cooper, (ADEM) 205/271-7732
EPA Emergency Spill Center 404/881-4062

F. EMERGENCY ROUTES

(Give road or other directions; attach map)

Hospital:

Other:

ENVIRONMENTAL PROTECTION SYSTEMS, INC.

RCRA 3012
SITE SCREENING STUDY FORM

EPS Project Manager: W. Warren Date: 11/19/84

SITE INFORMATION

EPA I.D. No: ALD000652693

Site Name: Reynolds Metals - River Road Plant Street: River Road

City: Muscle Shoals County: Colbert State: Alabama

Site Owner: Reynolds Metals Co.

Site Manager: Mr. Charles Bent Phone No: 804/281-2918

Address: 6601 West Broad Street, Richmond VA 23261

Purpose of Study: To collect environmental and waste samples on and around the site to determine and characterize any hazardous materials present.

Site Sketch Attached: X Yes ___ No

SITE BACKGROUND

Site Description (including Waste Types and Dispositions):

Reynolds Metals Company purchased the River Road facility from Union Carbide in 1980. The facility was involved in manufacturing ferromanganese alloys. Emission control dust was placed in three area landfills. Facility also used cyanide at one time. Records did indicate that cyanide destruction was in use since that operation began.

METHODOLOGY

All sample collection, sample preservation and chain-of-custody procedures used during this investigation will be in accordance with the standard operating procedures as specified in the Quality Control/Quality Assurance Plan for the Analytical and Environmental Division of Environmental Protection Systems, Inc., revised August 31, 1984. All laboratory analyses and quality assurance procedures used during this investigation will be in accordance with standard procedures and protocols as specified in the Quality Control/Quality Assurance Plan for the Analytical and Environmental Division of Environmental Protection Systems, Inc., revised August 31, 1984, or as specified by the existing United States Environmental Protection Agency standard procedures and protocols for the contract analytical laboratory program.

SAMPLING REQUIREMENTS

No. Water Samples: ___ No. Soil/Sediment Samples: 7
No. Sludge Samples: ___ Other: ___

Split Samples Requested?: ___ Yes ___ No ___ Unknown

If yes, reason: ___

Sample Information: Duplicate Samples: One Per Site

Station	Type	Organics Acid	Organics B/N	Organics Pest	Metals Total	Metals EPT	VOA	Other
RE-S01-LA	Soil/Comp.				X			CN
RE-S02-LA	Soil/Comp.				X			CN
RE-S03-LA	Soil/Comp.				X			CN
RE-S04-LA	Soil/Comp.				X			CN
RE-S05-LA	Soil/Comp.				X			CN
RE-S06-LA	Soil/Comp.				X			CN
RE-S07-AS	Soil/Comp.				X			CN

TOTALS:

Water ___
Soil 7
Sediment ___
Sludge ___
Other ___

LABORATORY RESOURCE REQUIREMENTS

Anticipated Date(s) of Sample Delivery: December 1984

Analytical Needs:

Analysis	Water Samples	Soil Samples	Totals
Organics			
Acid Extractables:			
Base/Neutrals:			
Pesticides:			
Organics (Other:):			
Total Metals (Specified: Pb, Cd, Cr):		7	7
EP Toxic Metals (Specified:):			
VOA:			
Other: Cyanide		7	7

PERSONNEL REQUIREMENTS

Field Personnel:

REGULATORY COORDINATION

EPA Project Officer: Joel Veater Phone No. 404/881-2234

Location: Atlanta, Georgia

Local Agency Contact: Steve Maurer Phone No. 205/271-7728

Location: Montgomery, Alabama

PROJECT SCHEDULE

Site Screening Study Form Transmittal Date:

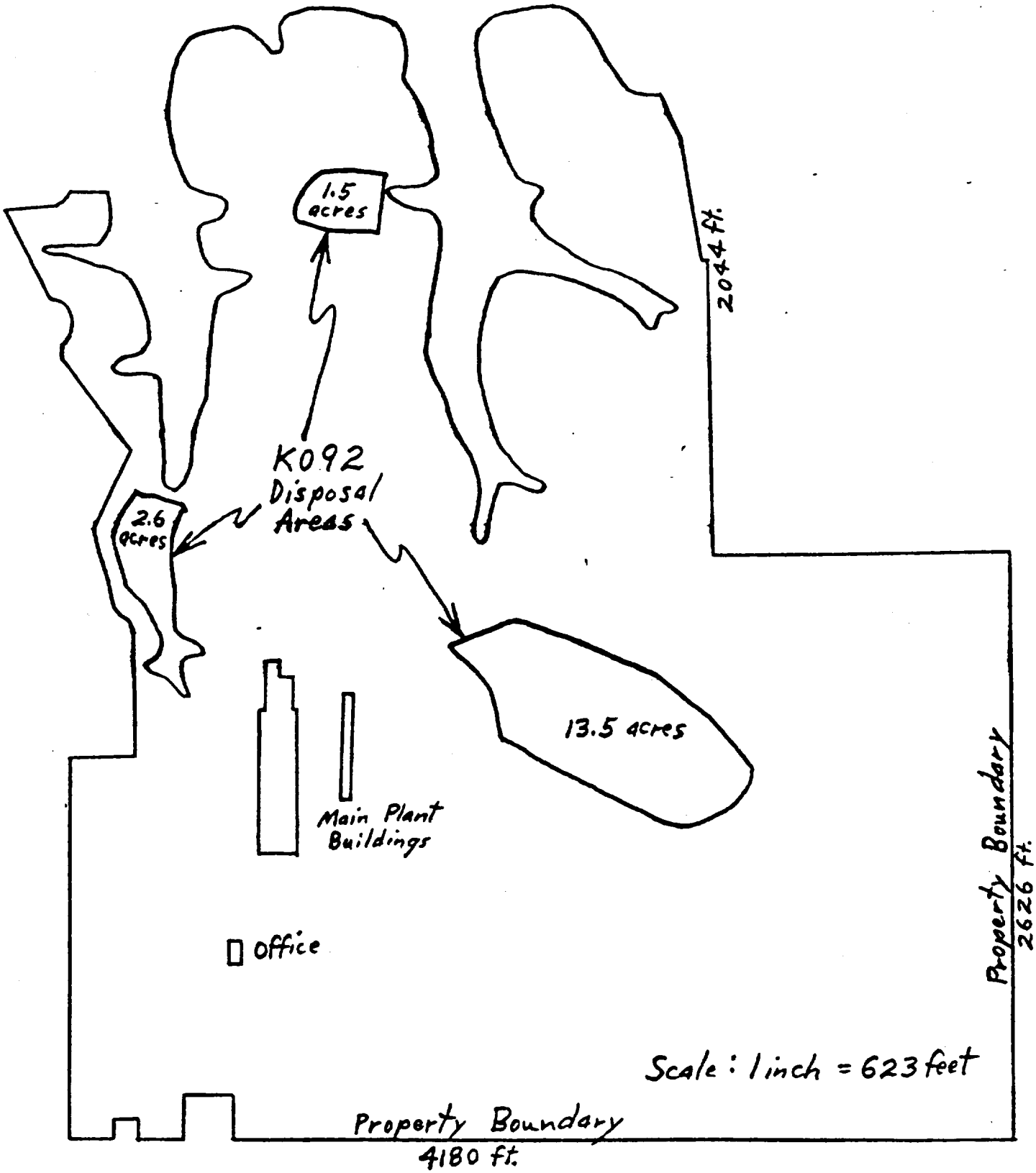
Field Study Date:

Anticipated Data Receipt Date:

Form Approved OMB No. 158-S80004

FACILITY DRAWING *(see page 4)*

EPA I.D. No. ALT020010195
Form 3, Item V.



EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 1 - SITE LOCATION AND INSPECTION INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
AL	D000652693

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER
Wrong REYNOLDS METALS CO.-ALABAMA RECLAMATION	RIVER ROAD

03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG DIST
MUSCLE SHOALS	AL	35660	COLBERT	033	05

09 COORDINATES LATITUDE	LONGITUDE	10 TYPE OF OWNERSHIP (Check one)
34 44 32.__	087 36 00.__	☒ A. PRIVATE ☐ B. FEDERAL ____ ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL ☐ F. OTHER ____ ☐ G. UNKNOWN

III. INSPECTION INFORMATION

01 DATE OF INSPECTION	02 SITE STATUS	03 YEARS OF OPERATION
1 15 85 MONTH DAY YEAR	☒ ACTIVE ☐ INACTIVE	Landfill 1940 of BEGINNING YEAR ENDING YEAR ____ UNKNOWN

04 AGENCY PERFORMING INSPECTION (Check all that apply) Plant?

☐ A. EPA ☐ B. EPA CONTRACTOR ____ (Name of firm) ☐ C. MUNICIPAL ☐ D. MUNICIPAL CONTRACTOR ____ (Name of firm)

☐ E. STATE ☒ F. STATE CONTRACTOR EPS, INC. (Name of firm) ☐ G. OTHER ____ (Specify)

05 CHIEF INSPECTOR	06 TITLE	07 ORGANIZATION	08 TELEPHONE NO
DONALEA DINSMORE	ENVIRONMENTAL CHEMIST	EPS	(601) 922-5242

09 OTHER INSPECTORS	10 TITLE	11 ORGANIZATION	12 TELEPHONE NO
THOMAS McALPIN	FIELD SUPPORT STAFF	EPS	(901) 944-0301
			( )
			( )
			( )
			( )

13 SITE REPRESENTATIVES INTERVIEWED	14 TITLE	15 ADDRESS	16 TELEPHONE NO
EARL McGUIRE	PLANT ENGINEER	Wrong ALABAMA RECLAMATION	(205) 386-8316
			( )
			( )
			( )
			( )
			( )

17 ACCESS GAINED BY (Check one)	18 TIME OF INSPECTION	19 WEATHER CONDITIONS
☒ PERMISSION ☐ WARRANT	8 45 A.M.	SLIGHTLY WINDY, COLD 22°F-38°F WINDCHILL -2°F

IV. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NO
Call STEVE MAURER	ADEM	(205) 271-7728

04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NO.	08 DATE
DONALEA DINSMORE		EPS	(601)-922-5242	3 27 85 MONTH DAY YEAR

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
AL	DOX0652693

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

- [X] A SOLID
- [ ] B POWDER, FINES
- [ ] C SLUDGE
- [ ] D OTHER _____ (Specify)
- [ ] E SLURRY
- [ ] F LIQUID
- [ ] G GAS

02 WASTE QUANTITY AT SITE (Measures of waste quantities must be independent)

TONS _____
CUBIC YARDS UNKNOWN
NO. OF DRUMS _____

03 WASTE CHARACTERISTICS (Check all that apply)

- [ ] A TOXIC
- [ ] B CORROSIVE
- [ ] C RADIOACTIVE
- [ ] D PERSISTENT
- [ ] E SOLUBLE
- [ ] F INFECTIOUS
- [ ] G FLAMMABLE
- [ ] H IGNITABLE
- [ ] I HIGHLY VOLATILE
- [ ] J EXPLOSIVE
- [ ] K REACTIVE
- [ ] L INCOMPATIBLE
- [ ] M NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE	18	ACRES	HIGH TOTAL LEAD, NOT LEACHABLE
OLW	OILY WASTE			
SOL	SOLVENTS			
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS			

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

on 2250?
on 2000.

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
SLU	PROCESS SLUDGE (WITH LEAD)	999	SI	500-2200	MG/LG

V. FEEDSTOCKS (See Appendix for CAS Numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

PRELIMINARY ASSESSMENT
RCRA 3012 SITE INVESTIGATION

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
AL	D0006 52693

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☐ A. GROUNDWATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED _____
02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ B. SURFACE WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED _____
02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ C. CONTAMINATION OF AIR
03 POPULATION POTENTIALLY AFFECTED _____
02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS
03 POPULATION POTENTIALLY AFFECTED _____
02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ E. DIRECT CONTACT
03 POPULATION POTENTIALLY AFFECTED _____
02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☒ F. CONTAMINATION OF SOIL
03 AREA POTENTIALLY AFFECTED 18 (Acres)
02 ☒ OBSERVED (DATE 1/15/85) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

SLUDGE CONTAINS 500-2000 ppm TOTAL LEAD AND WAS PLACED IN SURFACE IMPOUNDMENTS - AREA NOW DRY WITH DIRECT SOIL CONTACT

01 ☐ G. DRINKING WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED _____
02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ H. WORKER EXPOSURE/INJURY
03 WORKERS POTENTIALLY AFFECTED _____
02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ I. POPULATION EXPOSURE/INJURY
03 POPULATION POTENTIALLY AFFECTED _____
02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
AL	D006.5269.3

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☐ J. DAMAGE TO FLORA — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ K. DAMAGE TO FAUNA — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION (Include names(s) of species)

01 ☐ L. CONTAMINATION OF FOOD CHAIN — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ M. UNSTABLE CONTAINMENT OF WASTES (Spills, Runoff, Standing liquids, Leaking drums) — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 ☐ N. DAMAGE TO OFFSITE PROPERTY — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: _____

IV. COMMENTS

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION
PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
AL	D 000652693

II. PERMIT INFORMATION

01 TYPE OF PERMIT ISSUED (Check all that apply)	02 PERMIT NUMBER	03 DATE ISSUED	04 EXPIRATION DATE	05 COMMENTS
☐ A NPDES				INACTIVE
☐ B UIC				
☐ C AIR				INACTIVE
☐ D RCRA				
☒ E RCRA INTERIM STATUS	ALD000652693	11/80		WITHDRAWN
☐ F SPCC PLAN				
☐ G STATE (Specify)				
☐ H LOCAL (Specify)				
☐ I OTHER (Specify)				
☐ J NONE				

III. SITE DESCRIPTION

01 STORAGE/DISPOSAL (Check all that apply)	02 AMOUNT	03 UNIT OF MEASURE
☒ A SURFACE IMPOUNDMENT	18	ACRES
☐ B PILES		
☐ C DRUMS, ABOVE GROUND		
☐ D TANK, ABOVE GROUND		
☐ E TANK, BELOW GROUND		
☐ F LANDFILL		
☐ G LANDFARM		
☐ H OPEN DUMP		
☐ I OTHER (Specify)		

04 TREATMENT (Check all that apply)

- ☐ A INCENERATION
- ☐ B UNDERGROUND INJECTION
- ☐ C CHEMICAL/PHYSICAL
- ☐ D BIOLOGICAL
- ☐ E WASTE OIL PROCESSING
- ☐ F SOLVENT RECOVERY
- ☐ G OTHER RECYCLING/RECOVERY
- ☐ H OTHER (Specify)

05 OTHER

- ☒ A BUILDINGS ON SITE

06 AREA OF SITE

> 50 acres

07 COMMENTS

SURFACE IMPOUNDMENTS NOW DRY - SOME COVERED WITH KUDZU AND OTHER VEGETATION

IV. CONTAINMENT

01 CONTAINMENT OF WASTES (Check one)

☐ A ADEQUATE, SECURE ☐ B MODERATE ☐ C INADEQUATE, POOR ☐ D INSECURE, UNSOUND, DANGEROUS

02 DESCRIPTION OF DRUMS, DIKING, LINERS, BARRIERS, ETC

FORMER SURFACE IMPOUNDMENT HAD DIKING AND WASTE MATERIAL WELL CONTAINED WITHIN INDIVIDUAL AREAS. DIKES PRESENTLY OVERGROWN WITH VEGETATION

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE ☒ YES ☐ NO

02 COMMENTS

SOME RESTRICTED ACCESS DUE TO VEGETATION

VI. SOURCES OF INFORMATION (Cite specific references, e.g. state files, sample analysis, reports)

RCRA PART A APPLICATION
SITE INVESTIGATION

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
AL	D000652693

II. DRINKING WATER SUPPLY

01 TYPE OF DRINKING SUPPLY (Check as applicable)	SURFACE	WELL	02 STATUS	ENDANGERED	AFFECTED	MONITORED	03 DISTANCE TO SITE
COMMUNITY	A. ☒	B. ☐		A. ☐	B. ☐	C. ☒	A. 30. (mi)
NON-COMMUNITY	C. ☐	D. ☐		D. ☐	E. ☐	F. ☐	B. _____ (mi)

III. GROUNDWATER

01 GROUNDWATER USE IN VICINITY (Check one)

☐ A. ONLY SOURCE FOR DRINKING ☐ B. DRINKING (Other sources available) COMMERCIAL, INDUSTRIAL, IRRIGATION (No other water sources available) ☒ C. COMMERCIAL, INDUSTRIAL, IRRIGATION (Limited other sources available) ☐ D. NOT USED, UNUSEABLE

02 POPULATION SERVED BY GROUND WATER UNKNOWN

03 DISTANCE TO NEAREST DRINKING WATER WELL UNKNOWN (mi)

04 DEPTH TO GROUNDWATER	05 DIRECTION OF GROUNDWATER FLOW	06 DEPTH TO AQUIFER OF CONCERN	07 POTENTIAL YIELD OF AQUIFER	08 SOLE SOURCE AQUIFER
150-200 (ft)	GEN. NORTH TO RIVER	150-200 (ft)	700,000 (gpd)	☐ YES ☒ NO

09 DESCRIPTION OF WELLS (Including usage, depth, and location relative to population and buildings)

NO WELL LOGS AVAILABLE - SOME SPRINGS REPORTED SOUTHWEST OF FACILITY

10 RECHARGE AREA ☐ YES ☐ NO COMMENTS GENERAL AQUIFER MAPS INDICATE SITE IN POTENTIAL RECHARGE OF TUSCUMBIA LIMESTONE AQUIFERS

11 DISCHARGE AREA ☐ YES ☐ NO COMMENTS NUMEROUS SPRINGS IN COUNTY AS WELL AS TENNESSEE RIVER

IV. SURFACE WATER

01 SURFACE WATER USE (Check one)

☒ A. RESERVOIR, RECREATION DRINKING WATER SOURCE ☐ B. IRRIGATION, ECONOMICALLY IMPORTANT RESOURCES ☐ C. COMMERCIAL, INDUSTRIAL ☐ D. NOT CURRENTLY USED

02 AFFECTED/POTENTIALLY AFFECTED BODIES OF WATER

NAME	AFFECTED	DISTANCE TO SITE
TENNESSEE RIVER	☐	0.05 (mi)
	☐	(mi)
	☐	(mi)

V. DEMOGRAPHIC AND PROPERTY INFORMATION

01 TOTAL POPULATION WITHIN

ONE (1) MILE OF SITE	TWO (2) MILES OF SITE	THREE (3) MILES OF SITE
A. 50 (EST) NO OF PERSONS	B. 300 (EST) NO OF PERSONS	C. _____ NO OF PERSONS

02 DISTANCE TO NEAREST POPULATION 0.2 (mi)

03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE _____

04 DISTANCE TO NEAREST OFF-SITE BUILDING 0.2 (mi)

05 POPULATION WITHIN VICINITY OF SITE (Provide narrative description of nature of population within vicinity of site, e.g. rural village, densely populated urban area)

RESIDENTIAL AREAS ARE LOCATED ALONG THE TENNESSEE RIVER BACKWATERS BOTH TO THE EAST AND WEST OF THE FACILITY. ANOTHER SUB-DIVISION IS LOCATED TO SOUTHWEST OF SITE. TO SOUTH AND EAST AREAS ARE EITHER ~~UNDEVELOPED~~ UNDEVELOPED OR INDUSTRIAL. MAJOR POPULATION AREAS LOCATED TO WEST OF SITE IN MUSCLE SHOALS - TRI CITIES AREA.

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
AL	D000652693

VI. ENVIRONMENTAL INFORMATION

01 PERMEABILITY OF UNSATURATED ZONE (Check one)

☐ A. $10^{-6} - 10^{-8}$ cm/sec ☒ B. $10^{-4} - 10^{-6}$ cm/sec ☐ C. $10^{-4} - 10^{-3}$ cm/sec ☐ D. GREATER THAN 10^{-3} cm/sec

02 PERMEABILITY OF BEDROCK (Check one)

☐ A. IMPERMEABLE (Less than 10^{-6} cm/sec) ☒ B. RELATIVELY IMPERMEABLE ($10^{-4} - 10^{-6}$ cm/sec) ☐ C. RELATIVELY PERMEABLE ($10^{-2} - 10^{-4}$ cm/sec) ☐ D. VERY PERMEABLE (Greater than 10^{-2} cm/sec)

03 DEPTH TO BEDROCK	04 DEPTH OF CONTAMINATED SOIL ZONE	05 SOIL pH
UNKNOWN (ft)	EST 8 - 12 (ft)	4.5 - 5.5

06 NET PRECIPITATION	07 ONE YEAR 24 HOUR RAINFALL	08 SLOPE: SITE SLOPE	DIRECTION OF SITE SLOPE	TERRAIN AVERAGE SLOPE
14.2 (in)	2.5 (in)	10-20 %	VARIABLE	10-20 %

09 FLOOD POTENTIAL

SITE IS IN >100 YEAR FLOODPLAIN

10 ☐ SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY

11 DISTANCE TO WETLANDS (5 acre minimum)

ESTUARINE: A. _____ (mi)

OTHER: B. 3 (mi)

12 DISTANCE TO CRITICAL HABITAT (of endangered species)

>10 (mi)

ENDANGERED SPECIES: _____

13 LAND USE IN VICINITY

DISTANCE TO:

COMMERCIAL/INDUSTRIAL	RESIDENTIAL AREAS; NATIONAL/STATE PARKS, FORESTS, OR WILDLIFE RESERVES	AGRICULTURAL LANDS: PRIME AG LAND	AGRICULTURAL LANDS: AG LAND
A. 1 (mi)	B. 0.2 (mi)	C. 0.5 (mi)	D. 0.5 (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

LAND IN TENNESSEE RIVER VALLEY CHARACTERIZED BY ROLLING HILLS AND GENTLE SLOPES. SOME BLUFFS LOCATED ALONG RIVER. INDUSTRIAL AREAS TO SOUTH HAVE RELATIVELY FLAT TOPOGRAPHY WITH SLOPES < 2%. PLANT SITE ITSELF IS HILLY WITH MANUFACTURING OPERATIONS IN RELATIVELY LEVEL SECTION.

VII. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

CORP. OF ENGINEERS DATA INVENTORY FOR STATE OF ALABAMA
GROUNDWATER RESOURCES OF COLBERT COUNTY

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 6 - SAMPLE AND FIELD INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
AL	D000652693

II. SAMPLES TAKEN

SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAILABLE
GROUNDWATER			
SURFACE WATER			
WASTE	7	ENVIRONMENTAL PROTECTION SYSTEMS, INC.	3/11/85
AIR			
RUNOFF			
SPILL			
SOIL	1	ENVIRONMENTAL PROTECTION SYSTEMS, INC	3/11/85
VEGETATION			
OTHER			

III. FIELD MEASUREMENTS TAKEN

01 TYPE	02 COMMENTS

IV. PHOTOGRAPHS AND MAPS

01 TYPE ☐ GROUND ☐ AERIAL

02 IN CUSTODY OF NO PICTURES ALLOWED AT SITE (Name of organization or individual)

03 MAPS ☒ YES ☐ NO

04 LOCATION OF MAPS ENCLOSED, ADEM FILES

V. OTHER FIELD DATA COLLECTED (Provide narrative description)

VI. SOURCES OF INFORMATION (Cite specific references, e.g. state files, sample analysis, reports)

RCRA 3012 SITE INVESTIGATION
LABORATORY PROJECT MANAGER

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 7 - OWNER INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
AL	D000652693

II. CURRENT OWNER(S)			PARENT COMPANY (If applicable)		
01 NAME: Reynolds Metals Company	02 D+B NUMBER		08 NAME	09 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.): 6601 West Broad St.	04 SIC CODE		10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE	
05 CITY: Richmond	06 STATE: Va.	07 ZIP CODE: 23261	12 CITY	13 STATE	14 ZIP CODE
01 NAME	02 D+B NUMBER		08 NAME	09 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE		10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE	12 CITY	13 STATE	14 ZIP CODE
01 NAME	02 D+B NUMBER		08 NAME	09 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE		10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE	12 CITY	13 STATE	14 ZIP CODE
01 NAME	02 D+B NUMBER		08 NAME	09 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE		10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE	12 CITY	13 STATE	14 ZIP CODE

III. PREVIOUS OWNER(S) (List most recent first)			IV. REALTY OWNER(S) (If applicable, list most recent first)		
01 NAME: Union Carbide	02 D+B NUMBER		01 NAME	02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE		03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE
01 NAME	02 D+B NUMBER		01 NAME	02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE		03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE
01 NAME	02 D+B NUMBER		01 NAME	02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE		03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Preliminary Assessment

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 8 - OPERATOR INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
AL	D000652693

II. CURRENT OPERATOR (Provide if different from owner)			OPERATOR'S PARENT COMPANY (If applicable)		
01 NAME: ALABAMA RECLAMATION		02 D+B NUMBER	10 NAME: REYNOLDS METALS		11 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.): RIVER ROAD		04 SIC CODE	12 STREET ADDRESS (P.O. Box, RFD #, etc.): 6601 WEST BROAD ST		13 SIC CODE
05 CITY: MUSCLE SHOALS	06 STATE: AL	07 ZIP CODE: 35660	14 CITY: RICHMOND	15 STATE: VA	16 ZIP CODE: 23261
08 YEARS OF OPERATION: 1 (1984) BEGIN	09 NAME OF OWNER: REYNOLDS METALS				

III. PREVIOUS OPERATOR(S) (List most recent first; provide only if different from owner)			PREVIOUS OPERATORS' PARENT COMPANIES (If applicable)		
01 NAME		02 D+B NUMBER	10 NAME		11 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	12 STREET ADDRESS (P.O. Box, RFD #, etc.)		13 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	14 CITY	15 STATE	16 ZIP CODE
08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD				
01 NAME		02 D+B NUMBER	10 NAME		11 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	12 STREET ADDRESS (P.O. Box, RFD #, etc.)		13 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	14 CITY	15 STATE	16 ZIP CODE
08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD				
01 NAME		02 D+B NUMBER	10 NAME		11 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	12 STREET ADDRESS (P.O. Box, RFD #, etc.)		13 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	14 CITY	15 STATE	16 ZIP CODE
08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD				

IV. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

PRELIMINARY ASSESSMENT

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 9 - GENERATOR/TRANSPORTER INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
AL	D000652693

II. ON-SITE GENERATOR

01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE

III. OFF-SITE GENERATOR(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE

IV. TRANSPORTER(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

No HAZARDOUS WASTE CURRENTLY GENERATED

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
AL	D000652693

II. PAST RESPONSE ACTIVITIES

01 ☐ A. WATER SUPPLY CLOSED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ B. TEMPORARY WATER SUPPLY PROVIDED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ C. PERMANENT WATER SUPPLY PROVIDED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ D. SPILLED MATERIAL REMOVED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ E. CONTAMINATED SOIL REMOVED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ F. WASTE REPACKAGED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ G. WASTE DISPOSED ELSEWHERE — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ H. ON SITE BURIAL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ I. IN SITU CHEMICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ J. IN SITU BIOLOGICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ K. IN SITU PHYSICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ L. ENCAPSULATION — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ M. EMERGENCY WASTE TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ N. CUTOFF WALLS — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ O. EMERGENCY DIKING/SURFACE WATER DIVERSION — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ P. CUTOFF TRENCHES/SUMP — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ Q. SUBSURFACE CUTOFF WALL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
AL	D 000652693

II PAST RESPONSE ACTIVITIES (Continued)

01 ☐ R. BARRIER WALLS CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ S. CAPPING/COVERING — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ T. BULK TANKAGE REPAIRED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ U. GROUT CURTAIN CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ V. BOTTOM SEALED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ W. GAS CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ X. FIRE CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ Y. LEACHATE TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ Z. AREA EVACUATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ 1. ACCESS TO SITE RESTRICTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ 2. POPULATION RELOCATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ 3. OTHER REMEDIAL ACTIVITIES — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

ADEM LAND AND WATER FILES

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 11 - ENFORCEMENT INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
AL	D006652693

II. ENFORCEMENT INFORMATION

01 PAST REGULATORY/ENFORCEMENT ACTION ☐ YES ☒ NO

02 DESCRIPTION OF FEDERAL, STATE, LOCAL REGULATORY/ENFORCEMENT ACTION

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA FORM 2070-13 (7-81)

Union Carbide
Sheffield

REFERENCE NO. 3

STATE OF ALABAMA

WATER IMPROVEMENT COMMISSION

ROOMS 324-326
STATE OFFICE BUILDING
MONTGOMERY 4, ALABAMA

IRA L. MYERS, M. D.
CHAIRMAN

ARTHUR N. BECK
TECHNICAL SECRETARY

July 13, 1971

Mr. Gregg Fawkes
Center for Study of Responsive Law
1156 19th Street
Washington, D. C. 20036

Dear Mr. Fawkes:

I have your questionnaire dated June 8 which was received in this office on June 15. I regret that due to the press of other business, namely that connected with implementation of the 1899 Refuse Act, I have not been able to respond earlier.

You indicate that your group is conducting an investigation of the Union Carbide Corporation and are interested in the quality of pollution control at the Union Carbide facility located in Alabama at Sheffield. In the foregoing I will attempt to provide you with the present status of the waste water discharge at this plant as well as to acquaint you with some background related to the waste discharges.

We are, of course, pleased to provide you with the information you wish although I should point out that much of the information listed in the questionnaire is not applicable to the Carbide facility at Sheffield.

The Sheffield plant manufactures ferro-silicon alloys in electric furnaces. Cooling water is pumped from Lake Wilson and is used without treatment. It is not contaminated other than being increased in temperature before being returned to the lake after retention in a basin designed to reduce the temperature. Contaminated wastes from the plant result from the washing of flue gases in gas scrubbers which remove noncombustible materials before discharge to the atmosphere. The solids removed consist principally of carbon and silica. Cyanide is also present in the gases and is removed in the scrubbing process. Waste waters from the gas scrubbing operation flow to a waste water treatment system described as follows. Cyanide is destroyed by the addition of chlorine following pH adjustment. From this phase of the treatment facility the waste is then pumped to a clariflocculator where a

coagulant aid is added to remove the bulk of the suspended material. The effluent from the clariflocculator then flows to a series of settling ponds for further removal of suspended material. The overflow from the final settling pond discharges to an embayment of Lake Wilson at a point approximately 1½ miles upstream from Wilson Dam.

Sanitary wastes are treated in a secondary-type aeration plant. The effluent from the sanitary plant is chlorinated prior to mixing with the treated industrial wastes.

Prior to 1965 the company operated a calcium carbide furnace at the Sheffield plant. This operation resulted in larger quantities of cyanide being removed in the gas scrubber system. While adequate treatment of cyanide has been provided at the plant since commencement of operation, the removal of suspended material was not entirely satisfactory until approximately three years ago. At that time, additional sedimentation basins were installed for removal of suspended materials. Following installation of these improvements, together with other refinements in the treatment system, the Commission issued a waste discharge permit on August 17, 1970, limiting the characteristics of the wastes discharged to the following: Cyanide 0.025 ppm, Suspended Solids 25 ppm, pH 6.0 to 9.5, and temperature rise 15 degrees above intake. A copy of the waste discharge permit is enclosed. As is true with all major water users in Alabama, this agency has required Union Carbide to submit daily monitoring reports to this agency on a monthly basis. Since completion of the improvements referred to above, the company has consistently met the effluent requirements specified by the Commission.

Prior to the completion of the improvements referred to above, carbonaceous solids were discharged by the plant into the small embayment receiving the effluent. This material accumulated in the bottom of the embayment and as a result of fluctuations of the water level, wind action and other physical phenomena, solids appeared downstream and were the subject of complaints from boat and property owners. The matter of removal of material discharged in previous years has been the subject of investigation by this office and other state and Federal agencies. The company has also employed Florence State University personnel to investigate the feasibility and effect of the removal of such material. At this point it appears that it would not be desirable to attempt to remove the previously deposited material in the small embayment as it has been found that approximately 12 inches of silt and organic material overlays the carbonaceous solids. It is speculated by those who have investigated the problem that attempts to remove the previously deposited material would create an extremely undesirable condition downstream. The matter is being further studied and a final decision has not been reached at this time.

I have attempted to provide you with the information listed in your questionnaire but in the event I have not covered all information you wish

I would be happy to hear from you. It occurs to me that a write-up describing waste water treatment facilities at this plant which appeared on Page 21 of our 1967-68 Biennial Report might be of interest to you. I am enclosing a copy of the report for your information.

Yours very truly,

John M. Bolton
Assistant Director, Technical Staff
Water Improvement Commission

JMB/jb

Enclosures

REFERENCE NO. 4

Summary of Pollution Abatement Plan
Submitted by
UNION CARBIDE CORPORATION
MINING AND METALS DIVISION
Sheffield, Alabama

Union Carbide's Sheffield plant is located on the Tennessee River a short distance upstream of Wilson Dam. The plant manufactures ferrosilicon alloys in electric furnaces which are charged with silica gravel, scrap steel, wood chips, coal and coke. Flue gases from each of the six furnaces are washed in individual gas scrubbers which remove non-combustible materials from the gas before it is discharged to the atmosphere. The solids removed consist primarily of carbon, silica and calcium oxide. Cyanide is also present in the gases and is removed in the wet scrubbing of the gases emitted from the furnaces. Cooling water for indirect cooling of the furnaces is pumped from Lake Wilson, used without treatment and released uncontaminated except for an approximately 15 degree rise in temperature.

Treatment and Control Facilities

Although Union Carbide's Sheffield plant is a "grandfather" industry, Commission personnel have been working with company officials for several years in developing and installing a satisfactory pollution abatement program. As a matter of fact, the company has not been officially notified under provisions of the new Water Pollution Control Law in view of the fact that final improvements to the waste treatment system were under construction. These facilities have now been completed and the company has made a formal request for consideration of their system by the Commission and issuance of a permanent permit if the system is deemed satisfactory. Due to the location of the plant which is on highly developed recreational waters and the proximity of a water supply intake a short distance downstream, a high degree of treatment and adequate safeguards to insure against unauthorized losses is needed.

The treatment system now in operation is briefly described in the following paragraphs.

Water from the six furnace gas washers consisting of an average flow of 1,600 gpm and a maximum of 2,750 gpm flows to the wet well at a pumping station. In the wet well lime and chlorine is added for the first step in the destruction of cyanides present in the waste. In this step the cyanide compounds are converted to cyanate compounds. From the lift station the wastes are pumped to a clarifloculator (settling tank) where the solids are settled. A coagulant aid is added as the wastes reach this unit. Deposited solids are pumped from the bottom of the tank several times daily to sludge lagoons on the plant property. The overflow from the settling tank is chlorinated again to complete the destruction of cyanates to nitrogen and carbon dioxide. The wastes next enter an earthern retention basin approximately 1.3 acres in area and with an average depth of 12 feet. From this basin, the wastes flow to a second earthern basin approximately 1.9 acres in area with an average depth of 8 feet. These two basins provide final polishing of the wastes in regard to the removal of solids carried over from the clarifloculator and provide additional contact time to complete the destruction of cyanides and cyanates. From the second basin the wastes flow to a smaller basin some 0.25 acres in area and 8 feet deep where the process wastes mix with the treated wastes from the plant's sanitary sewage treatment plant and with approximately ~~14,000~~ 1,000 gallons per minute of cooling water.

As a precaution in the event of pump or power failure at the main pumping station which lifts the wastes to the treatment system, an emergency basin approximately 4.6 acres in size has been provided which will permit a measure of treatment during such emergency periods. An alarm system is connected to the level controls in the wet well of the pumping station and wired to the plant's main control room so that any high level condition is detected at once. As an added precaution against failure of the system parallel pressure lines have been provided for the

first 150 feet from the pumping station. Experience has shown that calcium deposits from the lime added in the wet well build up in the first 100 feet from time to time and restrict flow in the pipe. By providing parallel lines, one section can be taken out of service for cleaning without interruption of pumping. A spare pump is also maintained.

Samples of the combined waste water stream discharged to Wilson Lake are collected daily and the results of analyses performed on them are submitted to the Commission at monthly intervals.

It should be pointed out that the plant wastes are discharged into an inlet just off Wilson Lake and prior to the installation of the treatment facilities described above received only partially treated wastes which contained large quantities of unsightly solids consisting of carbon and other materials. It is to be expected that solids deposited in the inlet over a period of years may still appear on the lake at intervals for sometime even though the wastes are now being given satisfactory treatment.

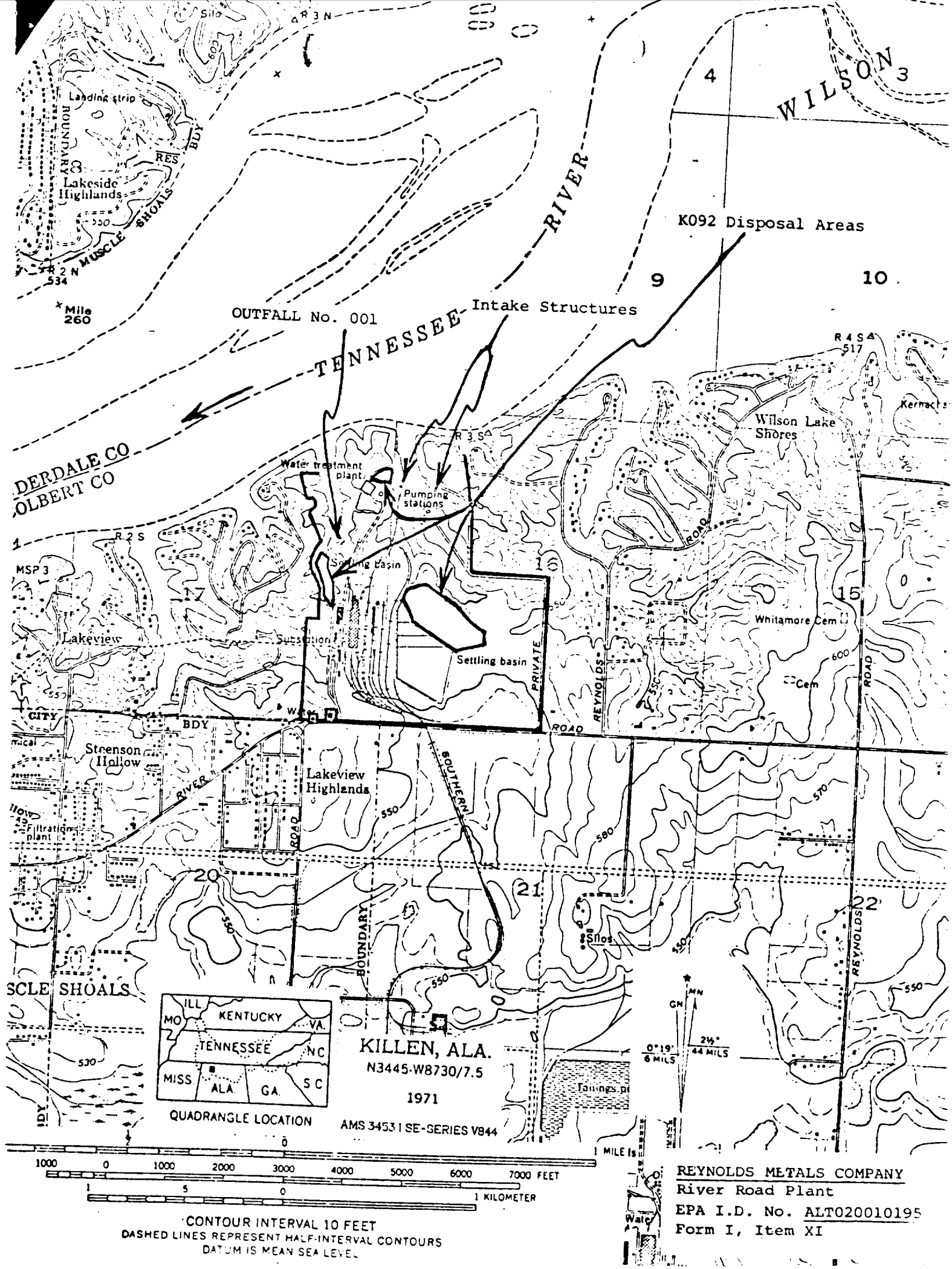
A unique feature of the company's waste control system would seem to be of interest to the Commission. Catfish and bream have been placed in the last pond of the treatment system to serve as a final indicator of the quality of water discharged.

Staff Recommendations

The staff recommends that the waste treatment facilities constructed by Union Carbide Company's Sheffield plant be approved and a permanent permit issued with the condition that the combined waste water not contain more than the following contaminants:

Cyanide	0.025 ppm
Suspended Solids	25 ppm
pH	9.5
Temperature	15 degree rise
Flow	14,000 gpm (average daily)

The company should be advised that the requirement pertaining to suspended solids would be interpreted as not more than a 25 ppm increase over that water taken from the lake. (The water is not treated for process purposes.) Similarly, the temperature requirement would mean that the water discharged would not be raised greater than 15 degrees except that the Commission's water quality criteria for this parameter would not be violated in any case.



REYNOLDS METALS COMPANY
River Road Plant
EPA I.D. No. ALT020010195
Form I, Item XI

(fill—in areas are spaced for elite type, i.e., 12 characters/inch).

Form Approved OMB No. 158-R0175

FORM 1 GENERAL

U.S. ENVIRONMENTAL PROTECTION AGENCY

GENERAL INFORMATION

Consolidated Permits Program

(Read the "General Instructions" before starting.)

I. EPA I.D. NUMBER: F A L T 0 2 0 0 1 0 1 9 5 D

LABEL ITEMS

I. EPA I.D. NUMBER

III. FACILITY NAME

V. FACILITY MAILING ADDRESS

VI. FACILITY LOCATION

REFERENCE NO. 5

PLEASE PLACE LABEL IN THIS SPACE

GENERAL INSTRUCTIONS

If a preprinted label has been provided, affix it in the designated space. Review the information carefully; if any of it is incorrect, cross through it and enter the correct data in the appropriate fill—in area below. Also, if any of the preprinted data is absent *(the area to the left of the label space lists the information that should appear)*, please provide it in the proper fill—in area*(s)* below. If the label is complete and correct, you need not complete Items I, III, V, and VI *(except VI-B which must be completed regardless)*. Complete all items if no label has been provided. Refer to the instructions for detailed item descriptions and for the legal authorizations under which this data is collected.

II. POLLUTANT CHARACTERISTICS

INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of **bold—faced terms**.

SPECIFIC QUESTIONS	MARK 'X' YES	NO	FORM ATTACHED	SPECIFIC QUESTIONS	MARK 'X' YES	NO	FORM ATTACHED
A. Is this facility a **publicly owned treatment works** which results in a **discharge** to **waters of the U.S.**? (FORM 2A)		X		B. Does or will this facility *(either existing or proposed)* include a **concentrated animal feeding operation** or **aquatic animal production facility** which results in a **discharge to waters of the U.S.**? (FORM 2B)		X	
C. Is this a facility which currently results in **discharges to waters of the U.S.** other than those described in A or B above? (FORM 2C)	X		*	D. Is this a proposed facility *(other than those described in A or B above)* which will result in a **discharge to waters of the U.S.**? (FORM 2D)		X	
E. Does or will this facility treat, store, or dispose of **hazardous wastes**? (FORM 3)	X		X	F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)		X	
G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)		X		H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4)		X	
I. Is this facility a proposed **stationary source** which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		X		J. Is this facility a proposed **stationary source** which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		X	

III. NAME OF FACILITY

1 SKIP REYNOLDS METALS CO., RIVER ROAD PLANT

IV. FACILITY CONTACT

A. NAME & TITLE *(last, first, & title)*	B. PHONE *(area code & no.)*
2 DOWNIE, R. FACILITIES MANAGER	205 381 5441

V. FACILITY MAILING ADDRESS

A. STREET OR P.O. BOX

3 P. O. BOX 1609

B. CITY OR TOWN	C. STATE	D. ZIP CODE
4 FLORENCE	AL	35631

VI. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER

5 RIVER ROAD

B. COUNTY NAME

COLBERT

C. CITY OR TOWN	D. STATE	E. ZIP CODE	F. COUNTY CODE *(if known)*
6 MUSCLE SHOALS	AL	35660	

EPA Form 3510-1 (6-80)

*Form 2C will be submitted in accordance with NPDES permitting regulations.

CONTINUE ON REVERSE

ONTINUED FROM THE FRONT

VII. SIC CODES (4-digit, in order of priority)

A. FIRST	B. SECOND
3313 (specify) Ferroalloys	7 (specify)
C. THIRD	**D. FOURTH**
(specify)	7 (specify)

VIII. OPERATOR INFORMATION

A. NAME: REYNOLDS METALS CO., ATTN: L. C. TROPEA

B. Is the name listed in Item VIII-A also the owner? [X] YES [ ] NO

C. STATUS OF OPERATOR (Enter the appropriate letter into the answer box; if "Other", specify.)
F = FEDERAL
S = STATE
P = PRIVATE
M = PUBLIC (other than federal or state)
O = OTHER (specify)

P (specify)

D. PHONE (area code & no.): A 804 281 3871

E. STREET OR P.O. BOX: 6601 WEST BROAD STREET

F. CITY OR TOWN: RICHMOND

G. STATE: VA

H. ZIP CODE: 23261

IX. INDIAN LAND

Is the facility located on Indian lands? [ ] YES [X] NO

X. EXISTING ENVIRONMENTAL PERMITS

A. NPDES (Discharges to Surface Water): N AL0000027	D. PSD (Air Emissions from Proposed Sources): 9 P
B. UIC (Underground Injection of Fluids): U	E. OTHER (specify): 9 (specify) See Attachment A
C. RCRA (Hazardous Wastes): R	E. OTHER (specify): 9 (specify)

XI. MAP

Attach to this application a topographic map of the area extending to at least one mile beyond property bounderies. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface water bodies in the map area. See instructions for precise requirements.

XII. NATURE OF BUSINESS (provide a brief description)

Plant has been used for ferroalloys manufacturing by the electric arc furnace process.

XIII. CERTIFICATION (see instructions)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME & OFFICIAL TITLE (type or print)	B. SIGNATURE	C. DATE SIGNED
Harry V. Helton, Vice President Corporate Operations Services	Harry Helton	1980 Nov. 17

COMMENTS FOR OFFICIAL USE ONLY

C

Please print or type in the shaded areas only
(fill-in areas are spaced for elite type, i.e., 12 characters/inch).

Form Approved OMB No. 158-S80004

FORM 3 RCRA

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY

HAZARDOUS WASTE PERMIT APPLICATION

Consolidated Permits Program

(This information is required under Section 3005 of RCRA.)

I. EPA I.D. NUMBER

5												
F	A	L	T	0	2	0	0	1	0	1	9	5

FOR OFFICIAL USE ONLY

APPLICATION APPROVED	DATE RECEIVED (yr., mo., & day)	COMMENTS
23	24 - 29	

II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below *(mark one box only)* to indicate whether this is the first application you are submitting for your facility or a revised application. If this is your first application and you already know your facility's EPA I.D. Number, or if this is a revised application, enter your facility's EPA I.D. Number in Item I above.

A. FIRST APPLICATION *(place an "X" below and provide the appropriate date)*

[X] 1. EXISTING FACILITY *(See instructions for definition of "existing" facility. Complete item below.)* (71)

FOR EXISTING FACILITIES, PROVIDE THE DATE *(yr., mo., & day)* OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED *(use the boxes to the left)*

C	YR.	MO.	DAY
8	8 0	0 6	3 0
15	73 74	75 76	77 78

[ ] 2. NEW FACILITY *(Complete item below.)* (71)

FOR NEW FACILITIES, PROVIDE THE DATE *(yr., mo., & day)* OPERATION BEGAN OR IS EXPECTED TO BEGIN

YR.	MO.	DAY
73 74	75 76	77 78

B. REVISED APPLICATION *(place an "X" below and complete Item I above)*

[ ] 1. FACILITY HAS INTERIM STATUS (72)

[ ] 2. FACILITY HAS A RCRA PERMIT (72)

III. PROCESSES – CODES AND DESIGN CAPACITIES

A. PROCESS CODE – Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code*(s)* in the space provided. If a process will be used that is not included in the list of codes below, then describe the process *(including its design capacity)* in the space provided on the form *(Item III-C)*.

B. PROCESS DESIGN CAPACITY – For each code entered in column A enter the capacity of the process.
1. AMOUNT – Enter the amount.
2. UNIT OF MEASURE – For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Storage:		
CONTAINER *(barrel, drum, etc.)*	S01	GALLONS OR LITERS
TANK	S02	GALLONS OR LITERS
WASTE PILE	S03	CUBIC YARDS OR CUBIC METERS
SURFACE IMPOUNDMENT	S04	GALLONS OR LITERS
Disposal:		
INJECTION WELL	D79	GALLONS OR LITERS
LANDFILL	D80	ACRE-FEET *(the volume that would cover one acre to a depth of one foot)* OR HECTARE-METER
LAND APPLICATION	D81	ACRES OR HECTARES
OCEAN DISPOSAL	D82	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	D83	GALLONS OR LITERS

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Treatment:		
TANK	T01	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	T02	GALLONS PER DAY OR LITERS PER DAY
INCINERATOR	T03	TONS PER HOUR OR METRIC TONS PER HOUR; GALLONS PER HOUR OR LITERS PER HOUR
OTHER *(Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided; Item III-C.)*	T04	GALLONS PER DAY OR LITERS PER DAY

UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE CODE
GALLONS	G	LITERS PER DAY	V	ACRE-FEET	A
LITERS	L	TONS PER HOUR	D	HECTARE-METER	F
CUBIC YARDS	Y	METRIC TONS PER HOUR	W	ACRES	B
CUBIC METERS	C	GALLONS PER HOUR	E	HECTARES	Q
GALLONS PER DAY	U	LITERS PER HOUR	H		

EXAMPLE FOR COMPLETING ITEM III *(shown in line numbers X-1 and X-2 below)*: A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

6		T/A	C
C	DUP		1
1	2 - 13	14	15

LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT (specify)	B. PROCESS DESIGN CAPACITY 2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY	LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT	B. PROCESS DESIGN CAPACITY 2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY
	16 - 18	19 - 27	28	29 - 32		16 - 18	19 - 27	28	29 - 32
X-1	S 0 2	600	G		5				
X-2	T 0 3	20	E		6				
1	D 8 3	815,000	Y		7				
2					8				
3					9				
4					10				

Continued from the front.

III. PROCESSES *(continued)*

C. SPACE FOR ADDITIONAL PROCESS CODES OR . R DESCRIBING OTHER PROCESSES *(code "T04")*. FOR EACH PROCESS ENTERED HERE INCLUDE DESIGN CAPACITY.

IV. DESCRIPTION OF HAZARDOUS WASTES

A. **EPA HAZARDOUS WASTE NUMBER** — Enter the four—digit number from 40 CFR, Subpart D for each listed hazardous waste you will handle. If you handle hazardous wastes which are not listed in 40 CFR, Subpart D, enter the four—digit number*(s)* from 40 CFR, Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.

B. **ESTIMATED ANNUAL QUANTITY** — For each **listed waste** entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each **characteristic** or **toxic contaminant** entered in column A estimate the total annual quantity of all the non—listed waste*(s)* that will be handled which possess that characteristic or contaminant.

C. **UNIT OF MEASURE** — For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
POUNDS	P	KILOGRAMS	K
TONS	T	METRIC TONS	M

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into account the appropriate density or specific gravity of the waste.

D. **PROCESSES**

1. PROCESS CODES:
   For listed hazardous waste: For each **listed** hazardous waste entered in column A select the code*(s)* from the list of process codes contained in Item III to indicate how the waste will be stored, treated, and/or disposed of at the facility.
   For non—listed hazardous wastes: For each characteristic or toxic contaminant entered in column A, select the code*(s)* from the list of process codes contained in Item III to indicate **all** the processes that will be used to store, treat, and/or dispose of all the non—listed hazardous wastes that possess that characteristic or toxic contaminant.
   Note: Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the extreme right box of Item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code*(s)*.

2. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on the form.

NOTE: HAZARDOUS WASTES DESCRIBED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER — Hazardous wastes that can be described by more than one EPA Hazardous Waste Number shall be described on the form as follows:

1. Select one of the EPA Hazardous Waste Numbers and enter it in column A. On the same line complete columns B,C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.
2. In column A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In column D(2) on that line enter "included with above" and make no other entries on that line.
3. Repeat step 2 for each other EPA Hazardous Waste Number that can be used to describe the hazardous waste.

EXAMPLE FOR COMPLETING ITEM IV *(shown in line numbers X-1, X-2, X-3, and X-4 below)* — A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non—listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

LINE NO.	A. EPA HAZARD. WASTE NO (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
X-1	K 0 5 4	900	P	T 0 3 D 8 0	
X-2	D 0 0 2	400	P	T 0 3 D 8 0	
X-3	D 0 0 1	100	P	T 0 3 D 8 0	
X-4	D 0 0 2				*included with above*

CONTINUE ON PAGE 3

Continued from page 2.
NOTE: Photocopy this page before completing if you l more than 26 wastes to list.

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EPA I.D. NUMBER (enter from page 1)		FOR OFFICIAL USE ONLY		
W A L T 0 2 0 0 1 0 1 9 5	T/A C 1	W DUP	T/A C 2	DUP

IV. DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
1	K 0 9 2	30,400*	T	D 8 3	*Based on pre-1980 data.
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					

Continued from the front.

IV. DESCRIPTION OF HAZARDOUS WASTE (continued)

E. USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM ITEM D(1) ON PAGE 3.

EPA I.D. NO. *(enter from page 1)*

F A L T 0 2 0 0 1 0 1 9 5 T/N C 6

V. FACILITY DRAWING

All existing facilities must include in the space provided on page 5 a scale drawing of the facility *(see instructions for more detail).*

VI. PHOTOGRAPHS

All existing facilities must include photographs *(aerial or ground—level)* that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas *(see instructions for more detail).*

VII. FACILITY GEOGRAPHIC LOCATION

LATITUDE *(degrees, minutes, & seconds)*	LONGITUDE *(degrees, minutes, & seconds)*
3 4 / 4 7 / 0 3 7	0 8 7 / 3 6 / 0 0 0

VIII. FACILITY OWNER

[X] A. If the facility owner is also the facility operator as listed in Section VIII on Form 1, "General Information", place an "X" in the box to the left and skip to Section IX below.

B. If the facility owner is not the facility operator as listed in Section VIII on Form 1, complete the following items:

1. NAME OF FACILITY'S LEGAL OWNER	2. PHONE NO. *(area code & no.)*
E	

3. STREET OR P.O. BOX	4. CITY OR TOWN	5. ST.	6. ZIP CODE
F	G		

IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME *(print or type)*	B. SIGNATURE	C. DATE SIGNED
Harry V. Helton	Harry V. Helton	1980-11-17

X. OPERATOR CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

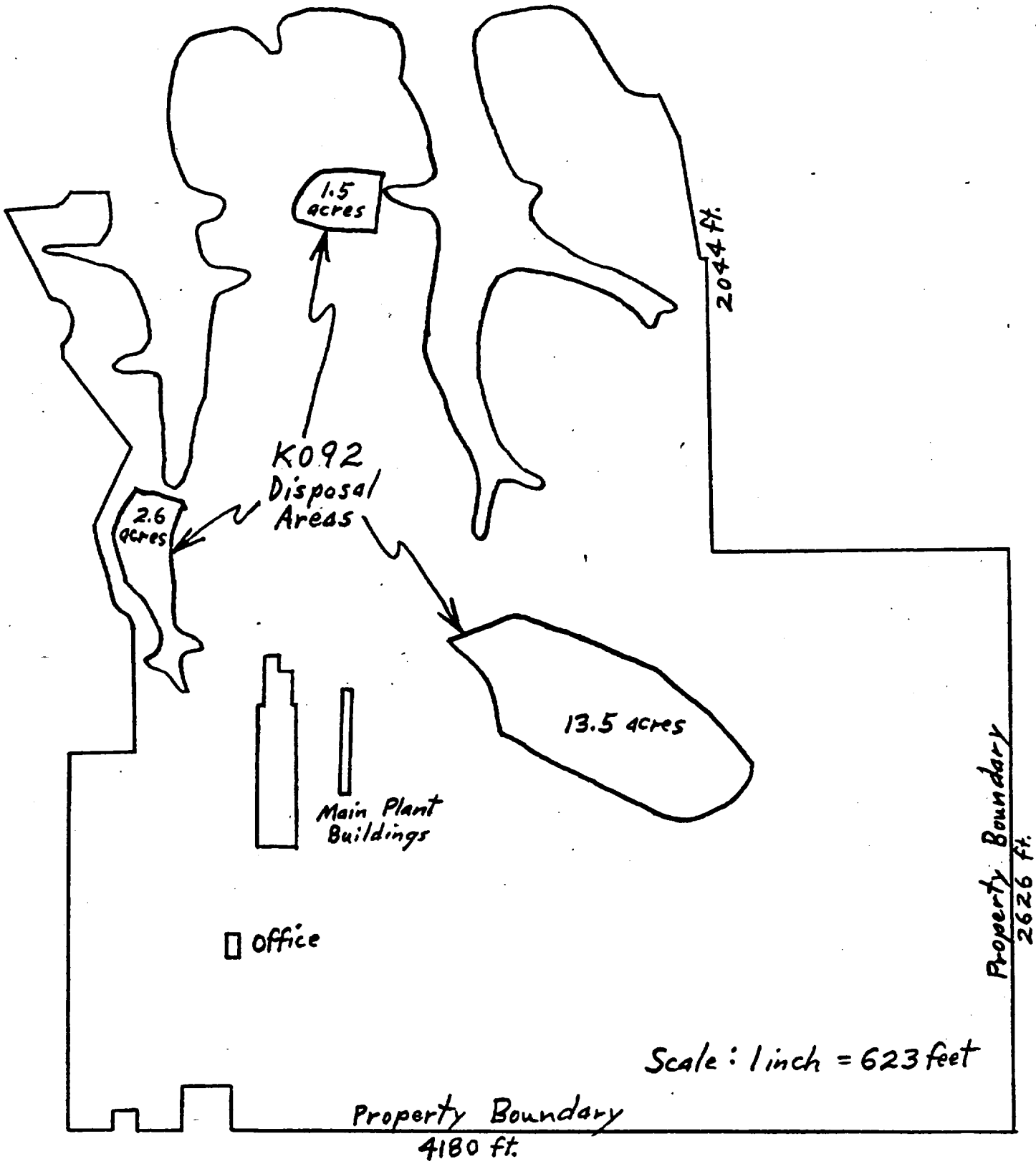
A. NAME *(print or type)*	B. SIGNATURE	C. DATE SIGNED

 CONTINUE ON PAGE 5

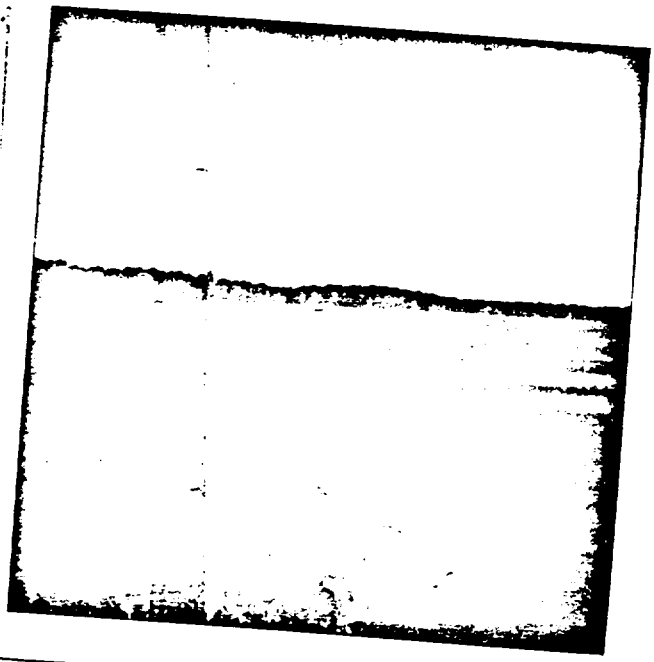
Form Approved OMB No. 158-S80004

V. FACILITY DRAWING *(see page 4)*

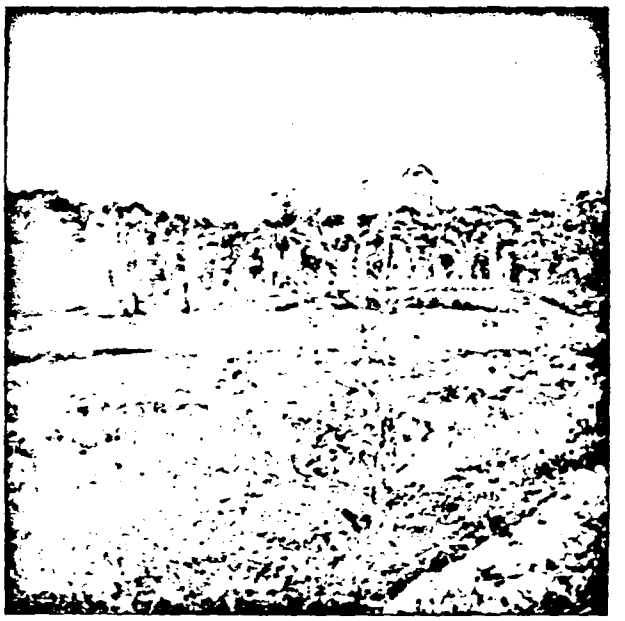
EPA I.D. No. ALT020010195
Form 3, Item V.



Form 3, Item VI
Reynolds Metals Company
River Road Plant
EPA I. D. No. ALT020010195
K092 Disposal Area
November 12, 1980



Form 3, Item VI
Reynolds Metals Company
River Road Plant
EPA I. D. No. ALT020010195
K092 Disposal Area
November 12, 1980



Form 3, Item VI
Reynolds Metals Company
River Road Plant
EPA I. D. No. ALT020010195
K092 Disposal Area
November 12, 1980

070980000.1 POLAROID

ATTACHMENT A

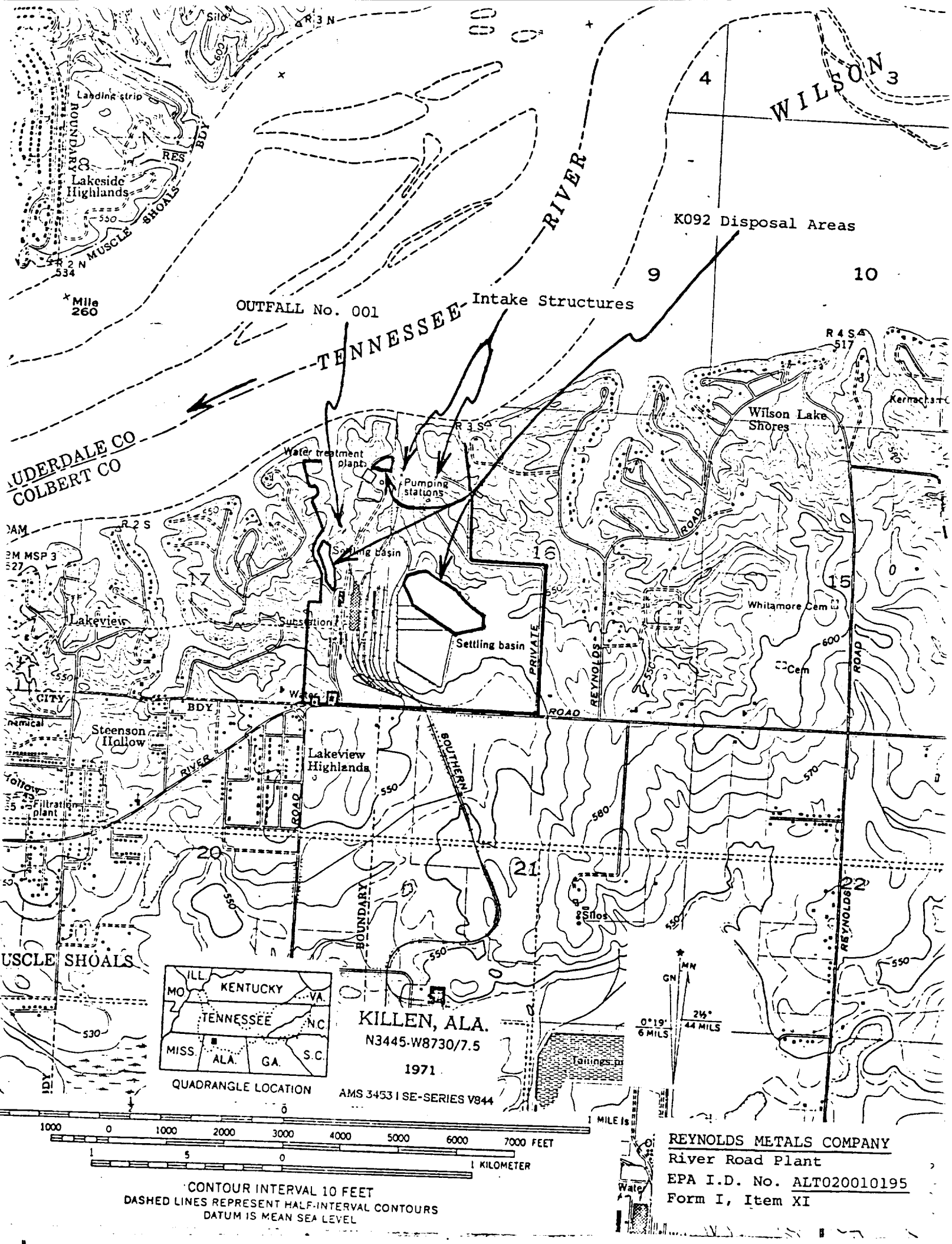
REYNOLDS METALS COMPANY
River Road Plant
ALT 020010195

Form 1, Item X.

Existing Environmental Permits (continued)

Alabama Air Pollution Control Commission

Permits to Operate No.'s:	701-0009-Z001
	701-0009-Z002
	701-0009-Z003
	701-0009-Z004
	701-0009-Z007



REYNOLDS METALS COMPANY
River Road Plant
EPA I.D. No. ALT020010195
Form I, Item XI

REFERENCE NO. 6

REYNOLDS ALUMINUM

REYNOLDS METALS COMPANY • RICHMOND, VIRGINIA 23261

May 13, 1985

EMERY EXPRESS

Mr. Stephen C. Maurer
RCRA 3012 Program Manager
Land Division
Alabama Department of Environmental Management
1751 Federal Drive
Montgomery, Alabama 36130

Re: Southern Reclamation Company
RCRA 3012
Site Inspection Report

Dear Mr. Maurer:

In conjunction with Southern Reclamation Company personnel, we have made an extensive review of Environmental Protection Sytems, Inc.'s Site Inspection Report. This report contains numerous technically and factually inaccurate statements. As an example, such basic information as the name and location of the site inspected is incorrect. We believe that this report must be corrected and, as stated in these comments, the recommendation for additional study is not appropriate or reasonable.

Please find attached our detailed review of Environmental Protection Systems, Inc.'s report. The review is keyed by section and paragraph to their report and a highlighted copy of their report is also attached.

Southern Reclamation Company has extensive analytical data on the disposal area investigated by the contractor. This analytical data is documented at varying depths throughout the depth of the landfill, and would provide information helpful in your investigation. This data parallels the analytical data presented in this report and includes analytical data for the entire depth of the disposal area. This information can be made available to appropriate state officials.

We firmly believe additional study work is not warranted at this site, and that this site is well managed and maintained. In addition, analytical data is available that would eliminate the needless expenditure of funds for additional investigations.

Finally, we hereby request that you immediately make a copy of our comments available to other Federal or State officials who have previously received a copy of the report.

If you have have any questions, please feel free to contact me at (804) 281-2918.

Sincerely yours,

Charles R. Bent, P. E.
Environmental Engineer
Environmental Control Department

CRB/ych
Attachments

cc: L. L. Held, Plant Manager, Southern Reclamation Co.

RCRA 3012 SITE INSPECTION REPORT

TITLE PAGE

The site inspected is not "Reynolds Metals Company, Alabama Reclamation Plant." The site inspected was the Southern Reclamation Company, and is not now, or has it ever been, named Alabama Reclamation. As you are aware, Reynolds does operate a facility named the Alabama Reclamation Plant at a location several miles from the inspected site. This incorrect information should be deleted from the report.

1.0 EXECUTIVE SUMMARY

As noted above, this facility is not Alabama Reclamation, but the Southern Reclamation Company. Please see comments under "Title Page."

While Southern Reclamation cannot be held accountable for the accuracy of information on Union Carbide's former operations at this site, it is our understanding that the starting date of their operation and the fact that they manufactured electric furnaces is not correct. All incorrect information should be removed from the report.

The total lead analytical data actually ranged from 541 to 2250 ppm and not between 500 to 2,300 ppm as incorrectly referenced in the executive summary. Furthermore, the report states that less than 1 ppm of the total lead was, in fact, leachable. The report fails to highlight that between 99.873 to 99.967% of the total lead in these samples are not leachable and as such, will not adversely

affect human health or the environment. The consultant, however, on the basis of this data, recommends additional tests. We believe this recommendation is not a reasonable recommendation based on the data presented and that no valid need for additional investigative work exists.

2.0 BACKGROUND

2.1 Location

The facility on River Road is not Alabama Reclamation and, as noted in the comments under "Title Page," is the Southern Reclamation Company. Also note that the longitude for the Southern Reclamation Company is improperly listed as 87° 37' 00". The correct longitude is 87° 36' 00". This correct information should be included in the report.

2.3 Ownership History

Please note under "Title Page" that this facility is an independent company, registered in Delaware and licensed to do business in Alabama under the name Southern Reclamation Company. The incorrect information should be deleted from the report.

2.4 Site Use History

This facility does business under the name Southern Reclamation Company as noted under "Title Page." All incorrect references to Alabama Reclamation should be removed from this report.

The use to which the owners of this site put this property after purchasing it in 1980 is not relevant to this report. The statement that the "...economy influenced the decision..." is without a basis of fact and has nothing to do with the historical use of this site. While the plant was not operational prior to and subsequent to the 1980 sale, alleged internal business-related decisions have no place in this report. These irrelevant comments should be removed from this report.

It should be further noted that Southern Reclamation Company, in addition to not treating, storing or disposing of hazardous wastes at this site, has never generated hazardous wastes at this site. Such clarifying language should be included in the report.

In this section of the report the contractor refers to "the company" and "they." Southern Reclamation Company has made no claims of fact concerning previous activities by Union Carbide except as noted in this review document. The report should clearly and unambiguously identify all sources of factual information or data included in the report.

2.5 Permit and Regulatory History

Manufacturing commenced during late 1984 at Southern Reclamation Company. The report incorrectly indicates no manufacturing operations took place during "1980 to mid-1984." This error should be corrected.

2.6 Remedial Actions to Date

No emergency corrective action has ever been determined to be required for this site. There is an implication in the way this section is written that an emergency corrective action was deemed necessary for this location but never performed. This is not the case. There is no evidence presented which would support the need to conduct an emergency corrective action. In fact, the report indicates that Union Carbide installed wastewater treatment systems and that studies concluded that corrective actions were not required. This section should be rewritten indicating that emergency corrective action has been neither required nor performed at this site.

2.7 Summary Trip Report

Please note grammatical errors. These errors should be corrected.

A statement concerning "the pipe" and a "let pipe" is meaningless and confusing. Proper terminology should be used in this report.

The "drainage" referenced in this section is a discharge through an NPDES permitted outfall. The report should clearly indicate that the "drainage" is permitted and neither illegal nor unregulated.

SECTION 3.0

3.1 Topography

The facility inspected is named Southern Reclamation Company. All incorrect references to the facility's name should be removed from the report. Please note comments under "Title Page."

3.2 Surface Waters

Please note that the facility inspected was Southern Reclamation Company and not Alabama Reclamation. The Tennessee River is a boundary line for this facility and is not located "within 4 miles" as incorrectly stated in the report. In addition, Southern Reclamation Company does not discharge wastewater to Pond Creek as incorrectly noted in the report. Comments included in the report concerning Spring Creek, flood plans and Haw Pond are equally incorrect and confuse the actual situation. This incorrect and superfluous information should be deleted from the report.

3.3 Geology and Soils

The facility inspected is named Southern Reclamation Company and it is not located on Second Avenue. Incorrect information concerning site name and location should be corrected.

3.4 Groundwater

This report has incorporated many inaccurate and incorrect statements concerning the identification and location of the site inspected, and we therefore

question the accuracy of this entire section. Based on the other numerous inaccuracies in the report, we question whether our site and the technical hydrogeological data presented are for the Southern Reclamation Company site. This data should be carefully reviewed and only relevant site specific information included in the report.

3.5 Climate and Meteorology

The annual precipitation and evaporation rates stated in this report appear incorrect. No reference is noted in the report specifically for this data and we question its accuracy. This data should be carefully reviewed and only correct site specific data included in this report.

3.6 Land Use

Please note that Alabama Reclamation is not located within 0.1 miles southeast of the Lakeview Heights subdivision and that Alabama Reclamation is not the facility inspected. These inaccurate and incorrect comments should be corrected or deleted from the report.

3.7 Population Distribution

Please note the "Title Page" comment which identifies the name of the facility as Southern Reclamation Company. All incorrect references to the name of this facility should be removed from this report.

3.8 Water Supply

Please note that the name of this facility is Southern Reclamation Company and not Reynolds Metals as noted in the text. In addition, the Southern Reclamation Company does not receive water from the Tennessee River nor is their water treated at the Reynolds Metals Reduction Plant. Southern Reclamation Company receives water from the City of Muscle Shoals. All incorrect information concerning water supply should be removed from the report.

The report indicates that there are numerous springs in Colbert County and that these springs are used for domestic stock and industrial needs. The report fails to note how many springs are in Colbert County or the actual number used for domestic stock or industrial water uses. The report implies that all Colbert County wells are used for domestic stock watering and industrial needs. No evidence is presented or referenced to support this fact. The accuracy of the statement concerning usage of springs in Colbert County is, at best, questionable and the relation of this information to the purpose of this inspection is unclear. All irrelevant data or information should be removed from the report. In addition, all incorrect or inaccurate information should be corrected or removed from the report.

3.9 Critical Environments/Endangered and Threatened Species

Again, please note that the name of the facility inspected is Southern Reclamation Company and not Reynolds Metals. This incorrect information should be removed from the report.

4.0 WASTE TYPES AND QUANTITIES

4.1 Waste Quantities

The 1980 Part A RCRA hazardous waste permit which was submitted for this facility identified three disposal areas containing K092 waste material. The total area identified was 17.1 acres and not 18 acres as noted in the report. Furthermore, the K092 waste material was not reported to be "exposed" in these disposal areas. These disposal areas have cover material including vegetation as noted in the report. The use of the word "exposed" is not descriptive of the disposal areas and, in fact, has a negative connotation not rightly deserving of this facility's past waste management practices. Furthermore, the report makes no reference to the fact that the U. S. EPA removed K092 waste materials from their regulated list after determining it was not, in fact, hazardous. All incorrect information must be removed from the report and clarifying language included indicating K092 waste material as non-hazardous and not regulated by the State of Alabama or the U. S. EPA.

4.2 Waste Disposal Methods and Locations

The generation of emission control sludge and the use of settling ponds were activities conducted by Union Carbide. Southern Reclamation Company has never operated any of the four disposal areas referenced in the report. The report should properly describe the actual situation in regards to these facilities.

The facts do not support the report's contention that not all of the disposal areas were identified in the Part A permit application. The Exhibits 2.1 and 2.2, which are a part of the report, were taken from the Part A permit application. Both exhibits clearly identify, by size, the disposal areas. The disposal areas encompass 1.5, 2..6 and 13.5 acres as noted in the report and Exhibits 2.1 and 2.2. The report should include only factual information and should be in agreement with the Exhibits attached to the report.

4.3 Waste Types

The generation of emission control dust sludge from ferromanganese production, i.e. K092, was done during the time Union Carbide owned this facility. The Part A permit application was filed in 1980 for K092 waste material that was generated and disposed of by Union Carbide. The U. S. EPA declared K092 waste material to be non-hazardous in 1981 and not in 1980 as noted in the report. This section should be expanded to clearly indicate the sequence of events leading up to the U. S. EPA declaring K092 waste material to be non-hazardous in 1981.

5.0 LABORATORY DATA

5.1 Summary

The leaching levels for cadmium, lead, and chromium are extremely low. The percentage of the total samples that are non-leaching are as follows: Cd, 98.5 to 99.02%; Pb, 99.89 to 99.97%; Cr, 99.71 to 99.92%. The samples collected during this site investigation have extremely low leaching levels and the report

should clearly highlight these facts, and the fact that none of the wastes investigated are actually hazardous.

6.0 TOXICOLOGICAL/CHEMICAL CHARACTERISTICS

This entire section has been taken out of context and no meaningful conclusions can be drawn concerning the toxicological information and the analytical data provided in the report. The report does not make any determination as to whether organic or inorganic forms of cadmium, chrome, or lead exists in the samples. Neither does it present data on the presence of chromic acid salts or chromate salts in the samples, yet the toxicological section of the report presents a discourse on the toxicity of such compounds. Similarly, toxicological data on hexavalent chromium is included in the report but no analytical data is presented showing the presence of such compounds at the disposal sites. In fact, no valid scientific link between the toxicological information presentd and the analytical data collected is made in the report. Any conclusions based on the referenced toxicological data, and without toxicological testing of the samples collected during the visit, are unsubstantiated and without a scientific basis. This section should be substantiated by scientifically acceptable toxicological testing or removed from this report.

7.0 CONCLUSIONS AND RECOMMENDATIONS

The actual disposal areas involved in this investigation total 17.1 acres. Only correct and accurate information should be included in this report.

As noted in Section 5.0, extremely low leaching levels were observed in the samples collected during this visit. The conclusion section should therefore highlight the low leaching levels observed, and clearly state that none of the wastes analyzed were hazardous by State or Federal definitions.

As noted in this section, the report states that the contractor was aware of information that indicates the approximate depth of the disposal areas. The report then goes on to conclude that additional work be done to verify the depth of the disposal areas. We take great exception to this recommendation since information on the depth of materials is readily available. Southern Reclamation Company has data available on the depth of these disposal areas, and EP Toxicity data at varying depths which shows that the leachability findings of this study are similar to the situation at lower depths. Southern Reclamation Company would, of course, be willing to make this data available to appropriate State officials. We do not therefore believe that an adequate basis exists for any further work at this site and believe that the report should be modified accordingly.

EXHIBITS

Analytical Reports

Please note that the name of the facility inspected is Southern Reclamation Company and not Reynolds Metals Company or the River Road Plant. Please delete these incorrect references from the report.

RCRA 3012

SITE RANKING SCHEME

Item 1

No definition of hazardous substance is detailed in this document. The Site Inspection Report listed no hazardous substance, yet the Site Ranking Scheme indicates such material is "suspected" at this site. This conclusion is unsupported and unsubstantiated in the report. The item should be reclassifed as "no hazardous substances."

Item 2

There is no evidence in the report substantiating surface or groundwater pollution. The contractor did not, to our knowledge, sample either surface or groundwater. An assessment of "No pathway" or "not known for sure" are the only possible options based on available data. This classification should be changed.

Item 5

This site is fenced or bound by the Tennessee River, all of which limit site access. Visitors are allowed on the plant site only for work-related purposes. This item should be reclassified "low or no potential contact."

RCRA 3012

SITE SAFETY PLAN

Part A

Site:

This location does not operate under the name Reynolds Metals Company or the River Road Plant. The plant is the Southern Reclamation Company, which is an independent and privately held Delaware Corporation qualified to do business in the State of Alabama. This incorrect information should be removed from the Site Safety Plan.

Part B

Waste Type(s):

Throughout the Site Inspection Report, waste material is referred to as "sludge." The Site Safety Plan makes reference to "solid" wastes. Neither the Site Inspection Report nor the Site Safety Plan explains this difference in terminology. Such differences should be clarified or consistent terminology should be used.

Part B

Characteristics:

The Plan describes the plant's wastes as "Toxic." Nothing in the data provided to Reynolds supports a hazardous waste characteristic classification of either Toxic or EP Toxic. The descriptions used under this section are the U. S. EPA hazardous waste characteristics, and the data collected during this study

does not support the conclusion of EP Toxic or Toxic. This assessment should be substantiated by factual information or removed from the plan.

Part C

Hazard Evaluation:

Southern Reclamation Company has never used cyanide at this facility. Southern Reclamation is a reclaimer of aluminum and does not use cyanide. Furthermore, it is our understanding that the former owners of this facility did not use cyanide in their process. While low levels of cyanide are present in the ponds, based on analytical data, only correct information should be included in the plan.

RCRA 3012

SITE SCREENING STUDY FORM

Site Information:

There is no location currently known as Reynolds Metals River Road Plant. The site inspected operates under the name Southern Reclamation Company. This incorrect information should be removed from this form.

The "site manager" is not Mr. Charles Bent. Mr. Bent is an environmental engineer with Reynolds Metals Company and is headquartered in Richmond, Virginia. Only correct information should be included in this form and incorrect information should be deleted.

Site Background:

The Southern Reclamation Company has never used cyanide in the operation of this facility. It has been reported that the former owners/operators did not use cyanide in their process. However, based on analytical results, low levels of cyanide are present in the ponds. Only correct information should be included in this form.

Sampling Requirements:

Southern Reclamation Company did request and receive split samples at the inspection, contrary to the information provided in this form. Only correct information should be included in this form.

POTENTIAL HAZARDOUS WASTES

SITE INSPECTION REPORT

Part 1

Item II

The name of the facility inspected is the Southern Reclamation Company. Southern Reclamation Company is an independent and privately held corporation. The facility inspected is not now, or has it ever been, named Alabama Reclamation. Reynolds Metals Company does operate a facility named Alabama Reclamation at a location several miles from the inspected site. This incorrect information should be removed from this report.

Item III

The Southern Reclamation Company does not currently operate any of the three landfill sites inspected. Therefore, this site is not "active" for the purpose of this inspection report. Only correct information should be included in this report.

In addition, we question the accuracy of the "beginning year" listed in this Site Inspection Report. This information should be carefully reviewed and verified, and only correct information included in this report.

The address listed for the plant engineer is not Alabama Reclamation. Please see Part I, Item II. All incorrect information should be deleted from this report.

POTENTIAL HAZARDOUS WASTE

SITE INSPECTION REPORT (CONT'D)

Part 2

Item III

The gross acreage listed is incorrect. Your Exhibit 2.2 lists 17.1 acres, not 18 acres. Only correct information should be included in this report.

Part 2

Item IV

The concentrations listed are incorrect. The actual analytical data gives total lead levels of between 541 mg/kg and 2,250 mg/kg. The total leachable lead levels vary from below 0.01 mg/kg to 0.74 mg/kg. The lead concentrations are incorrectly listed as varying between 500 to 2,200 mg/kg. All data included in this report should be correct and should accurately reflect data contained elsewhere in this report.

Part 3

Item II

As noted under Part 2, Items III & IV, the listed acreage and lead concentrations are incorrect. Again, all data included in this report should be accurate and correct.

POTENTIAL HAZARDOUS WASTE

SITE INSPECTION REPORT (CONT'D)

In addition, we seriously question the basis for concluding that there is "contamination of soil" in the sites inspected. Placement of waste materials in landfills does not automatically contaminate soils. There is no evidence presented to support this conclusion. Lacking such evidence, we believe this assessment and the conclusions which follow must be carefully reviewed and corrected.

Part 4

Item II

Southern Reclamation's NPDES and air permits are not inactive. Active permits under these respective programs do exist for the facility. The report should be changed to correctly indicate Southern Reclamation Company's current water and air permit status.

Item III

As noted under Part 2, Item III, the listed acreage is incorrect. Only accurate data should be included in this report.

The accessibility to the entire plant site is restricted due to perimeter fencing and the Tennessee River. This item is incorrect and should be corrected indicating that access to this site is well controlled and that there is no easy site access.

POTENTIAL HAZARDOUS WASTE

SITE INSPECTION REPORT (CONT'D)

Part 5

Item II

The City of Muscle Shoals reportedly gets its drinking water from deep wells located approximately 3 miles from inspection site and not from surface water as indicated in the report. We question the relevance of this information to this inspection and request that only accurate and relevant information be included in the report.

Item III

We question the basis for concluding the "depth to groundwater" and "direction of groundwater flow." There is no evidence presented in the report to support the information provided. Only factual information that can be supported by technical data should be included in this report, and all technical references should be clearly documented.

Item VI

We question the basis for concluding that the inspected sites have less than "impermeable" soil conditions. There is no evidence presented to support this technical conclusion. No permeability tests were conducted by the contractor at the time of this site inspection and no permeability test data is presented in this report. We further question what factual data was used to conclude that there

are contaminated soils, much less soil contamination extending to a depth of from "8-12 feet." Again, there is no evidence presented or referenced indicating any type of soil contamination. The Corp of Engineers Data Inventory referenced on this page should be included in the attachments to the Site Inspection Report, if it is the basis for these conclusions. Unless these conclusions can be supported by site specific factual data, they should be removed from the report.

Part 7

Item II

As noted under Part 1, Item II, the name of the facility inspected is Southern Reclamation Company. Incorrect information should be removed from this report.

Part 8

Item II

As noted under Part 1, Item II, the name of the facility inspected is not Alabama Reclamation. The correct name of the facility inspected is Southern Reclamation Company and this corrected information should be included in the report.

REFERENCE NO. 7

CLIMATIC ATLAS OF THE UNITED STATES

onmental Science Services Administration . Environmenta

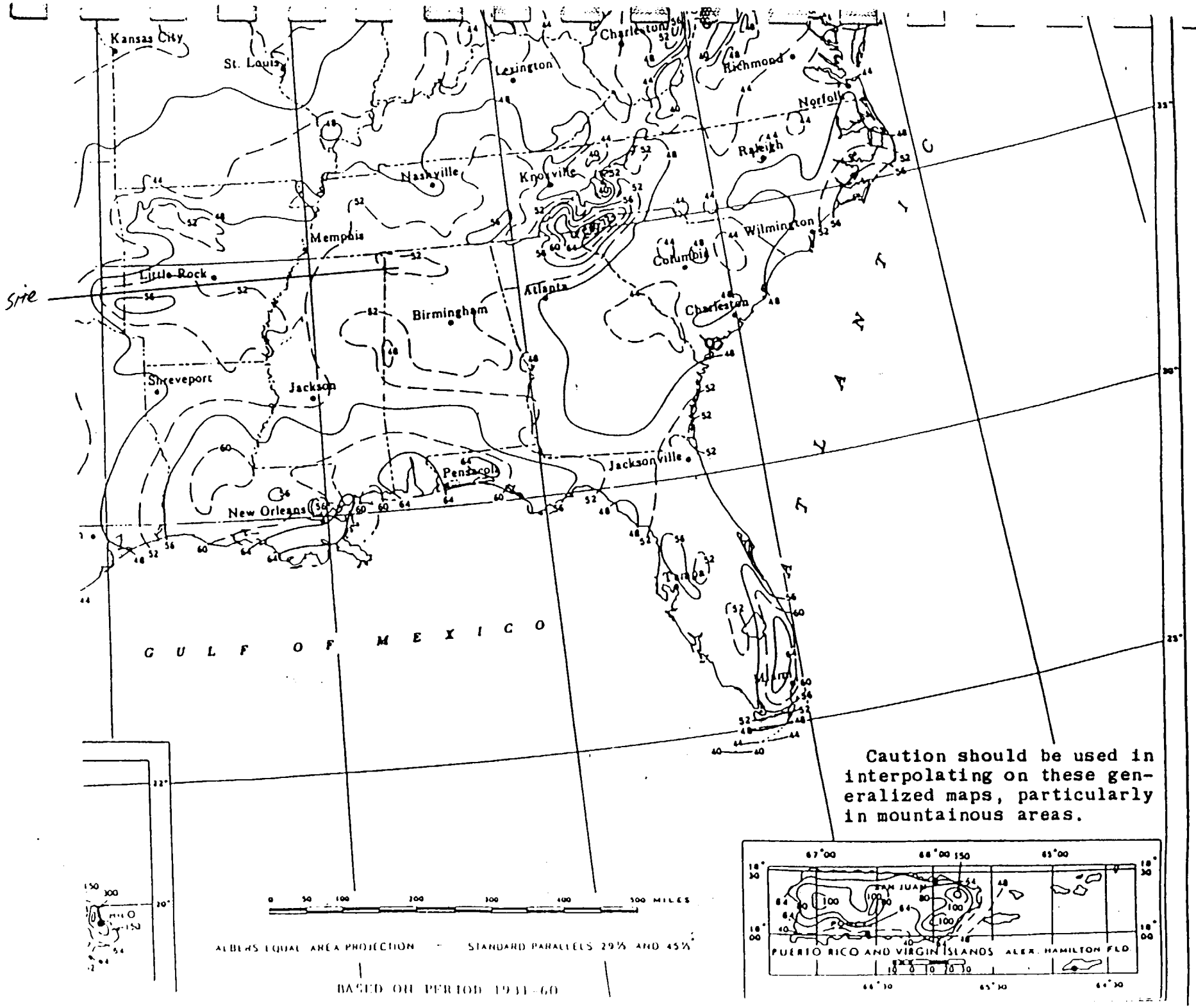
U.S. DEPARTMENT OF COMMERCE
C. R. Smith, Secretary

ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION
Robert M. White, Administrator

ENVIRONMENTAL DATA SERVICE
Woodrow C. Jacobs, Director

JUNE 1968

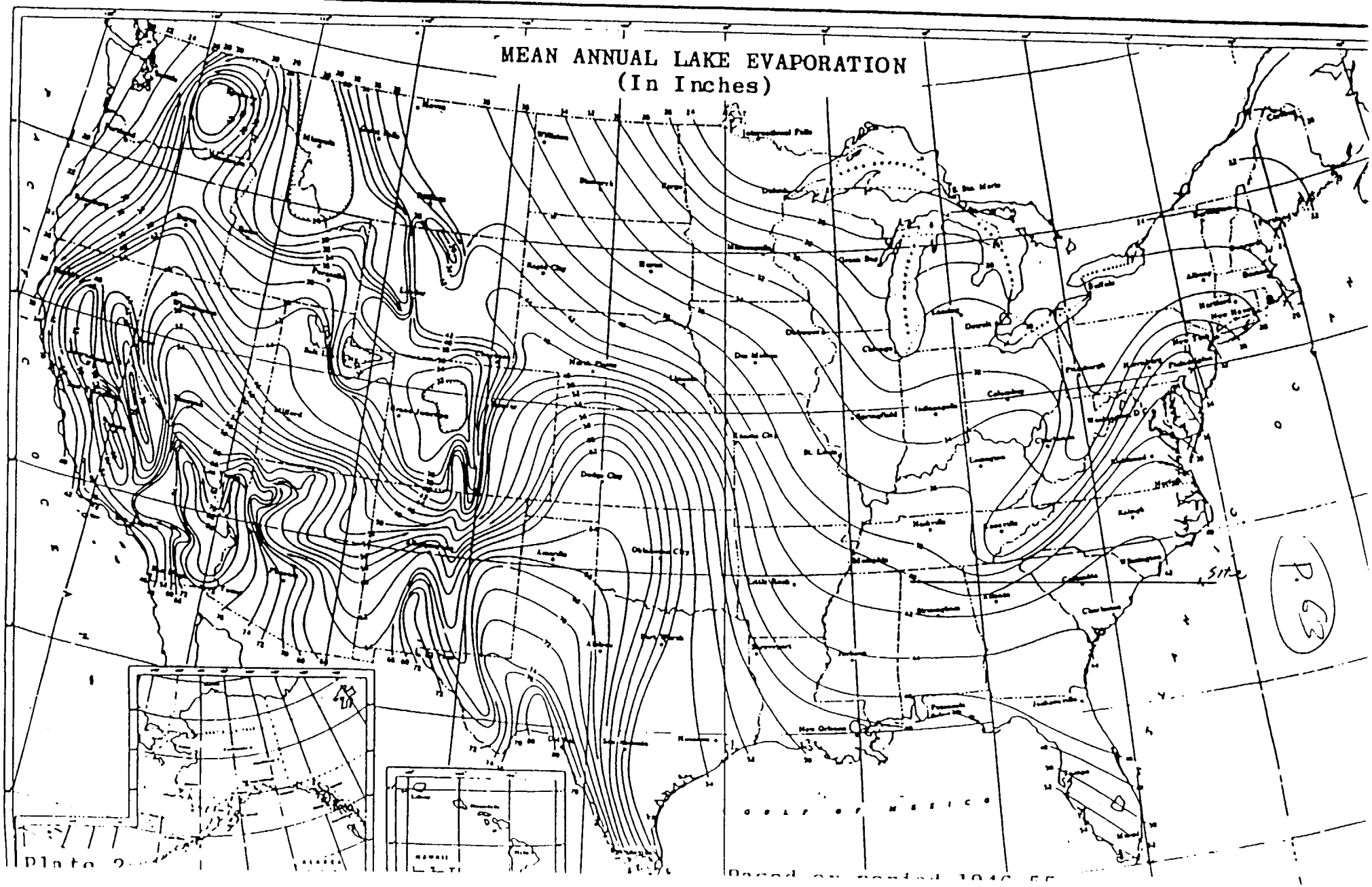
REPRINTED BY THE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
1983



Caution should be used in interpolating on these generalized maps, particularly in mountainous areas.

P. 43

LAKE EVAPORATION



OF COMMERCE
y

WEATHER
F. W. REICH

TECHNICAL PAPER NO. 40

RAINFALL FREQUENCY ATLAS OF THE UNITED STATES

for Durations from 30 Minutes to 24 Hours and Return Periods from 1 to 100 Years

Prepared by
DAVID M. HERSHFIELD
Cooperative Studies Section, Hydrologic Services Division
for
Engineering Division, Soil Conservation Service
U.S. Department of Agriculture

REFERENCE NO. 8

Reference No. 12

PROPERTY

PRICE LIST: RAINFALL FREQUENCY ATLASES

October 1985

The atlases described below may be ordered on one reel of 35mm microfilm at $12.50, or as individual paper pages at $2 per page, $4 service and handling charge per order. (Prices subject to change without notice.) Call to confirm current price.

National Climatic Data Center
Federal Building
Asheville, NC 28801-2696
704 CLI-MATE or 704-259-0682
Telex 6502643731

TP-40: Rainfall Frequency Atlas of the US - Weather Bureau Technical Paper No. 40 (Washington, DC: GPO, 1961) 14x21 ins, paper cover, 61 pages. (Superseded in part by two publications listed below.)

Presents 49 US rainfall frequency maps for selected durations from 30 minutes to 24 hours and return periods from 1 to 100 years. OUT-OF-PRINT, but a 8 1/2x14 in. reduced photocopy priced at $15 is available from the NCDC address above. Make payment to "Commerce-NOAA-NCDC".

HYDRO-35: Five- to 60-Minute Precipitation Frequency for the Eastern and Central US - NOAA Technical Memorandum NWS HYDRO-35 (Silver Spring, MD: NWS, 1977) 8 1/2x11 ins, cardstock cover, 36 pages. (Supersedes TP-40 above for the eastern 2/3 of the US for durations of 1 hr. and less).

Presents 6 US rainfall frequency maps for durations of 5, 15 and 60 minutes at return periods of 2 and 100 years. Equations are given to derive 10- and 30-min values between 2 and 100 years.

Order from: National Technical Info. Svc.
5285 Port Royal Rd.
Springfield, VA 22161
Order Desk Phone: 703-487-4650

Order No : PB 272-112
Prices: Paper $8.50
Microfiche $4.50

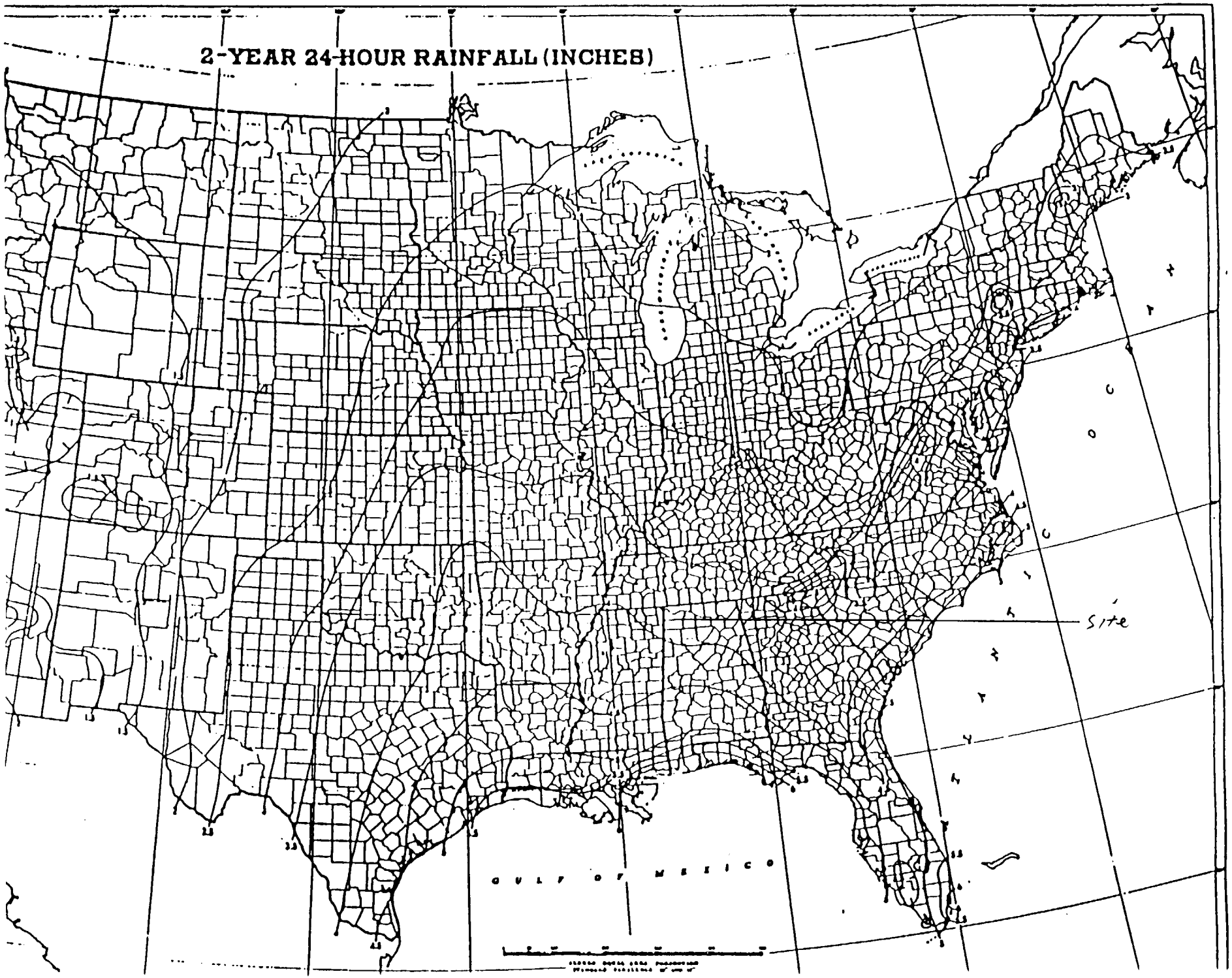
NOAA Atlas 2: Precipitation Frequency Atlas of the Western US (Washington, DC: GPO, 1973) 16x22 ins, cardstock cover, 11 Vols (Supersedes TP-40 above for the 11 western states) OUT OF PRINT.

This atlas contains maps for the 6- and 24-hour durations for return periods of 2, 5, 10, 25, 50, and 100 years. All maps are prepared on the same 1:2,000,000 scale.

Vol.	State	Pages	Photocopy Price
I	Montana	34	$ 68.00
II	Wyoming	34	$ 68.00
III	Colorado	47	$ 94.00
IV	New Mexico	34	$ 68.00
V	Idaho	35	$ 70.00
VI	Utah	46	$ 92.00
VII	Nevada	35	$ 70.00
VIII	Arizona	33	$ 66.00
IX	Washington	35	$ 70.00
X	Oregon	35	$ 70.00
XI	California	48	$ 96.00

(Note: Topographic contours and city names not always legible on microprints of NOAA Atlas 2. Blank, numbered pages are not reproduced, resulting in apparent missing pages, but no data pages are missing.)

$4 SERVICE AND HANDLING CHARGE PER ORDER.


2-YEAR 24-HOUR RAINFALL (INCHES)
GULF OF MEXICO
Site

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 1 - SITE INFORMATION AND ASSESSMENT

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
AL	D006652693

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER
REYNOLDS METALS COMPANY - RIVER ROAD PLANT	RIVER ROAD

03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG DIST
MUSCLE SHOALS	AL	35660	COULBERT	033	05

09 COORDINATES LATITUDE	LONGITUDE
34 47 37.	087 36 00.

10 DIRECTIONS TO SITE (Starting from nearest public road)
TRAVELING EAST ON RIVER ROAD, SITE IS LOCATED ON THE LEFT SIDE OF THE ROAD BEYOND FORD ROAD INTERSECTION. (EAST OF MUSCLE SHOALS)

III. RESPONSIBLE PARTIES

01 OWNER (If known)	02 STREET (Business, mailing, residential)
REYNOLDS METALS COMPANY	6601 WEST BROAD ST.

03 CITY	04 STATE	05 ZIP CODE	06 TELEPHONE NUMBER
RICHMOND	VA.	23261	(804) 281-3871

07 OPERATOR (If known and different from owner)	08 STREET (Business, mailing, residential)

09 CITY	10 STATE	11 ZIP CODE	12 TELEPHONE NUMBER
			( )

13 TYPE OF OWNERSHIP (Check one)
☒ A. PRIVATE ☐ B. FEDERAL _____ (Agency name) ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL
☐ F. OTHER _____ (Specify) ☐ G. UNKNOWN

14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply)
☒ A. RCRA 3001 DATE RECEIVED: 11/19/80 (MONTH DAY YEAR) ☐ B. UNCONTROLLED WASTE SITE (CERCLA 103 c) DATE RECEIVED: __/__/__ (MONTH DAY YEAR) ☐ C. NONE

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION
☐ YES DATE __/__/__ (MONTH DAY YEAR)
☒ NO

BY (Check all that apply)
☐ A. EPA ☐ B. EPA CONTRACTOR ☐ C. STATE ☐ D. OTHER CONTRACTOR
☐ E. LOCAL HEALTH OFFICIAL ☐ F. OTHER _____ (Specify)
CONTRACTOR NAME(S) _____

02 SITE STATUS (Check one)
☒ A. ACTIVE ☐ B. INACTIVE ☐ C. UNKNOWN

03 YEARS OF OPERATION
1940 (BEGINNING YEAR) | _____ (ENDING YEAR) ☐ UNKNOWN

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED
K092 - EMISSION CONTROL DUST SLUDGE FROM FERROMANGANESE PRODUCTION (REMOVED FROM EPA GENERIC LIST)

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION
LOW POTENTIAL HAZARD. THREE DISPOSAL AREAS WERE REPORTED AT THE SITE. HOWEVER K092 IS NO LONGER CONSIDERED HAZARDOUS SO THIS FACILITY DOES NOT FALL INTO THE CATEGORY OF A HAZARDOUS WASTE MANAGEMENT FACILITY. THE PART A WAS WITHDRAWN AND NO PRODUCTION HAS TAKEN PLACE SINCE 1980. THEY DO NOT GENERATE HAZARDOUS WASTE.

V. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents)
☐ A. HIGH (Inspection required promptly) ☐ B. MEDIUM (Inspection required) ☐ C. LOW (Inspection time available basis) ☒ D. NONE (No further action needed, complete current disposition form)

VI. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NUMBER
STEVE MAURER SUM	ADEM	(205) 271-7728

04 PERSON RESPONSIBLE FOR ASSESSMENT	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NUMBER	08 DATE
DONALEA DINSMORE		EPS	(601) 922-8242	9/26/84 (MONTH DAY YEAR)

EPA FORM 2070-12 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

- ☐ A. SOLID
- ☐ B. POWDER, FINES
- ☐ C. SLUDGE
- ☐ D. OTHER _____ (Specify)
- ☐ E. SLURRY
- ☐ F. LIQUID
- ☐ G. GAS

02 WASTE QUANTITY AT SITE (Measures of waste quantities must be independent)

TONS _____

CUBIC YARDS _____

NO. OF DRUMS _____

03 WASTE CHARACTERISTICS (Check all that apply)

- ☐ A. TOXIC
- ☐ B. CORROSIVE
- ☐ C. RADIOACTIVE
- ☐ D. PERSISTENT
- ☐ E. SOLUBLE
- ☐ F. INFECTIOUS
- ☐ G. FLAMMABLE
- ☐ H. IGNITABLE
- ☐ I. HIGHLY VOLATILE
- ☐ J. EXPLOSIVE
- ☐ K. REACTIVE
- ☐ L. INCOMPATIBLE
- ☐ M. NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE			
OLW	OILY WASTE			
SOL	SOLVENTS			
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS			

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE CONCENTRAT

V. FEEDSTOCKS (See Appendix for CAS Numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBE
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

ADEM FILES, LAND AND WATER, CONVERSATION WITH CHARLES BENT. OF REYNOLD METALS

EPA FORM 2070-12 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER

II. HAZARDOUS CONDITIONS AND INCIDENTS *(Continued)*

01 ☐ J. DAMAGE TO FLORA — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ K. DAMAGE TO FAUNA — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION *(Include name(s) of species)*

01 ☐ L. CONTAMINATION OF FOOD CHAIN — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ M. UNSTABLE CONTAINMENT OF WASTES *(Spills/runoff/standing liquids/leaking drums)* — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 ☐ N. DAMAGE TO OFFSITE PROPERTY — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: _____

IV. COMMENTS

V. SOURCES OF INFORMATION *(Cite specific references, e.g., state files, sample analysis, reports)*

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☐ A. GROUNDWATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ B. SURFACE WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ C. CONTAMINATION OF AIR
03 POPULATION POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS
03 POPULATION POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ E. DIRECT CONTACT
03 POPULATION POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ F. CONTAMINATION OF SOIL
03 AREA POTENTIALLY AFFECTED: _____ (Acres)
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ G. DRINKING WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ H. WORKER EXPOSURE/INJURY
03 WORKERS POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ I. POPULATION EXPOSURE/INJURY
03 POPULATION POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

EPA Notification of Hazardous Waste Site

United States Environmental Protection Agency
Washington DC 20460

This initial notification information is required by Section 103(c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 and must be mailed by June 9, 1981.

Please type or print in ink. If you need additional space, use separate sheets of paper. Indicate the letter of the item which applies.

810609

REFERENCE NO. 10

ALS 000001097

A Person Required to Notify:

Enter the name and address of the person or organization required to notify.

Name: Reynolds Metals Company

~~Street~~ 6601 West Broad Street

City: Richmond State: VA Zip Code: 23261

B Site Location:

Enter the common name (if known) and actual location of the site.

ALD 000 652 693 mailing address

~~ALT 020 010 195~~

Name of Site: River Road Plant

Street: P. O. Box 1609 River Road

City: Florence County: Colbert State: AL Zip Code: 35631

C Person to Contact:

Enter the name, title (if applicable), and business telephone number of the person to contact regarding information submitted on this form.

Name (Last, First and Title): Bent, Charles, Staff Env. Engineer

Phone: 804/281-2918

SITE LOCATION: RIVER ROAD MUSCLE SHOALS AL 35660

D Dates of Waste Handling:

Enter the years that you estimate waste treatment, storage, or disposal began and ended at the site.

From (Year): 1980 To (Year): 1980

E Waste Type: Choose the option you prefer to complete

Option 1: Select general waste types and source categories. If you do not know the general waste types or sources, you are encouraged to describe the site in Item I—Description of Site.

General Type of Waste:
Place an X in the appropriate boxes. The categories listed overlap. Check each applicable category.

1. ☐ Organics
2. ☐ Inorganics
3. ☐ Solvents
4. ☐ Pesticides
5. ☐ Heavy metals
6. ☐ Acids
7. ☐ Bases
8. ☐ PCBs
9. ☐ Mixed Municipal Waste
10. ☒ Unknown
11. ☐ Other (Specify)

Source of Waste:
Place an X in the appropriate boxes.

1. ☐ Mining
2. ☐ Construction
3. ☐ Textiles
4. ☐ Fertilizer
5. ☐ Paper/Printing
6. ☐ Leather Tanning
7. ☐ Iron/Steel Foundry
8. ☐ Chemical, General
9. ☐ Plating/Polishing
10. ☐ Military/Ammunition
11. ☐ Electrical Conductors
12. ☐ Transformers
13. ☐ Utility Companies
14. ☐ Sanitary/Refuse
15. ☐ Photofinish
16. ☐ Lab/Hospital
17. ☐ Unknown
18. ☒ Other (Specify) manufacture of ferromanganese

Option 2: This option is available to persons familiar with the Resource Conservation and Recovery Act (RCRA) Section 3001 regulations (40 CFR Part 261).

Specific Type of Waste:
EPA has assigned a four-digit number to each hazardous waste listed in the regulations under Section 3001 of RCRA. Enter the appropriate four-digit number in the boxes provided. A copy of the list of hazardous wastes and codes can be obtained by contacting the EPA Region serving the State in which the site is located.

0006 14

RECEIVED
EPA/REGION IV
JUN 9 3 25 PM '81
ENFORCEMENT
DIVISION

Form Approved
OMB No. 2000-0138

EPA Form 8900-1

ALD 000 652 693

ENVIRONMENTAL PROTECTION AGENCY
NOTIS DATA MANAGEMENT SYSTEM

NOTIS REPORT #4 — LISTING BY FACILITY — REPORT DATE: 10/19/81

REGION: 04 STATE: AL

NOTIFICATION ID NO.	SITE NAME / SITE STREET / SITE CITY / SITE COUNTY / EPA SITE ID NO.	NOTIFIER NAME / NOTIFIER STREET / NOTIFIER CITY / STATE / ZIP / (CONTACT NAME/TITLE) / (CONTACT PHONE)	NOTIFIER STATUS (PRES OWN, PAST OWN PRES OP, PAST OP TRANSPORTER, VOLUNTEER)
ALS000001097	REYNOLDS METALS CO/RIVER RD PLANT RIVER RD FLORENCE 35631 COLBERT ALT020010195	LAWRENCE C. TROPEA, JR 6601 WEST BROAD ST RICHMOND VA 23261 (BENT, CHARLES, STAFF ENV ENGR) (804-281-2918)	PRES OWN

RELEASES TO THE ENVIRONMENT: NONE

DATES OF WASTE HANDLING: 1980 TO 1980

WASTE AMOUNT: 0 AREA: 0 MAP PRESENT: NO FORM TYPE: 8900-1

NOTIF. POSTMARKED DATE: 81/06/09 SIGNATURE PRESENT: YES DATE OF LAST UPDATE: 81/10/14

TYPE OF FACILITY	TYPES OF WASTES	SOURCES OF WASTE
OTHER-(SEE COMMENTS)	UNKNOWN	OTHER-(SEE COMMENTS)
OTHER-(SEE COMMENTS)		
OTHER-(SEE COMMENTS)		
OTHER-(SEE COMMENTS)		

COMMENTS	SEQ NO.
MANUFACTURE OF FERROMANGANESE	400
UNKNOWN	600

REFERENCE NO. 11

ch this → ?

EPA

POTENTIAL HAZARDOUS WASTE SITE IDENTIFICATION AND PRELIMINARY ASSESSMENT

REGION | SITE NUMBER (to be assigned by Hq) ALD 000652693

NOTE: This form is completed for each potential hazardous waste site to help set priorities for site inspection. The information submitted on this form is based on available records and may be updated on subsequent forms as a result of additional inquiries and on-site inspections.

ALD 000652693

GENERAL INSTRUCTIONS: Complete Sections I and III through X as completely as possible before Section II (*Preliminary Assessment*). File this form in the Regional Hazardous Waste Log File and submit a copy to: U.S. Environmental Protection Agency; Site Tracking System; Hazardous Waste Enforcement Task Force (*EN-335*); 401 M St., SW; Washington, DC 20460.

ALD000652693 COLBERT
REYNOLDS METALS CO/RIVER RD PLANT
RIVER RD
FLORENCE AL 35631
BENT, CHARLES, STAFF ENV* 8042812918

IFICATION

STREET (or other identifier) RIVER ROAD

STATE | E. ZIP CODE | F. COUNTY NAME

2. TELEPHONE NUMBER

H. TYPE OF OWNERSHIP

☐ 1. FEDERAL ☐ 2. STATE ☐ 3. COUNTY ☐ 4. MUNICIPAL ☐ 5. PRIVATE ☐ 6. UNKNOWN

I. SITE DESCRIPTION

"103-C NOTIFICATION" DATE: 810609
DAN COOPER OR BUDDY COX
PHONE: 205-832-6728

K. DATE IDENTIFIED (mo., day, & yr.)

2. TELEPHONE NUMBER

II. PRELIMINARY ASSESSMENT (complete this section last)

A. APPARENT SERIOUSNESS OF PROBLEM

☐ 1. HIGH ☐ 2. MEDIUM ☐ 3. LOW ☐ 4. NONE ☒ 5. UNKNOWN

B. RECOMMENDATION

☐ 1. NO ACTION NEEDED (no hazard)

☒ 3. SITE INSPECTION NEEDED
a. TENTATIVELY SCHEDULED FOR: Dec 1982
b. WILL BE PERFORMED BY: State / EPA

☐ 2. IMMEDIATE SITE INSPECTION NEEDED
a. TENTATIVELY SCHEDULED FOR:
b. WILL BE PERFORMED BY:

☐ 4. SITE INSPECTION NEEDED (low priority)

C. PREPARER INFORMATION

1. NAME | 2. TELEPHONE NUMBER | 3. DATE (mo., day, & yr.) 82 09 11

III. SITE INFORMATION

A. SITE STATUS

☐ 1. ACTIVE (*Those industrial or municipal sites which are being used for waste treatment, storage, or disposal on a continuing basis, even if infrequently.*)

☐ 2. INACTIVE (*Those sites which no longer receive wastes.*)

☐ 3. OTHER (*specify*): (*Those sites that include such incidents like "midnight dumping" where no regular or continuing use of the site for waste disposal has occurred.*)

B. IS GENERATOR ON SITE?

☐ 1. NO ☐ 2. YES (*specify generator's four-digit SIC Code*):

C. AREA OF SITE (*in acres*)

D. IF APPARENT SERIOUSNESS OF SITE IS HIGH, SPECIFY COORDINATES

1. LATITUDE (*deg.-min.-sec.*) | 2. LONGITUDE (*deg.-min.-sec.*)

E. ARE THERE BUILDINGS ON THE SITE?

☐ 1. NO ☐ 2. YES (*specify*):

POTENTIAL HAZARDOUS WASTE SITE
IDENTIFICATION AND PRELIMINARY ASSESSMENT

REGION	SITE NUMBER (to be assigned by HQ)

NOTE: This form is completed for each potential hazardous waste site to help set priorities for site inspection. The information submitted on subsequent forms as a result of additional inquiries and

ALD000652693 COLBERT
REYNOLDS METALS CO/RIVER RD PLANT
RIVER RD
FLORENCE AL 35631

completely as possible before Section II (Preliminary and submit a copy to: U.S. Environmental Protection Agency (EN-335), 401 M St., SW, Washington, DC 20460.

A. SITE LOCATION

B. STREET (or other identifier)

C. CITY	D. STATE	E. ZIP CODE	F. COUNTY NAME

G. OWNER/OPERATOR (if known)

1. NAME	2. TELEPHONE NUMBER

H. TYPE OF OWNERSHIP

☐ 1. FEDERAL ☐ 2. STATE ☐ 3. COUNTY ☐ 4. MUNICIPAL ☐ 5. PRIVATE ☐ 6. UNKNOWN

I. SITE DESCRIPTION

J. HOW IDENTIFIED (i.e., citizen's complaints, OSHA citations, etc.)

K. DATE IDENTIFIED (mo., day, & yr.)

L. PRINCIPAL STATE CONTACT

1. NAME	2. TELEPHONE NUMBER

II. PRELIMINARY ASSESSMENT (complete this section last)

APPARENT SERIOUSNESS OF PROBLEM

☐ 1. HIGH ☐ 2. MEDIUM ☐ 3. LOW ☐ 4. NONE ☐ 5. UNKNOWN

RECOMMENDATION

☐ 1. NO ACTION NEEDED (no hazard)

☐ 2. IMMEDIATE SITE INSPECTION NEEDED
a. TENTATIVELY SCHEDULED FOR:
b. WILL BE PERFORMED BY:

☐ 3. SITE INSPECTION NEEDED
a. TENTATIVELY SCHEDULED FOR:
b. WILL BE PERFORMED BY:

☐ 4. SITE INSPECTION NEEDED (low priority)

PREPARER INFORMATION

1. NAME	2. TELEPHONE NUMBER	3. DATE (mo., day, & yr.)

III. SITE INFORMATION

SITE STATUS

☐ 1. ACTIVE (Those industrial or disposal sites which are being used for waste treatment, storage, or disposal on a continuing basis, even if infrequently).

☐ 2. INACTIVE (Those sites which no longer receive wastes.)

☐ 3. OTHER (specify): (Those sites that include such incidents (like "midnight dumping") where no regular or continuing use of the site for waste disposal has occurred.)

GENERATOR ON SITE?

☐ 1. NO ☐ 2. YES (specify generator's four-digit SIC Code):

AREA OF SITE (in acres)

D. IF APPARENT SERIOUSNESS OF SITE IS HIGH, SPECIFY COORDINATES

1. LATITUDE (deg.—min.—sec.)	2. LONGITUDE (deg.—min.—sec.)

Continued From Front

IV. CHARACTERIZATION OF SITE ACTIVITY

Indicate the major site activity(ies) and details relating to each activity by marking 'X' in the appropriate boxes.

'X'	A. TRANSPORTER	'X'	B. STORER	'X'	C. TREATER	'X'	D. DISPOSER
	1. RAIL		1. PILE		1. FILTRATION		1. LANDFILL
	2. SHIP		2. SURFACE IMPOUNDMENT		2. INCINERATION		2. LANDFARM
	3. BARGE		3. DRUMS		3. VOLUME REDUCTION		3. OPEN DUMP
	4. TRUCK		4. TANK, ABOVE GROUND		4. RECYCLING/RECOVERY		4. SURFACE IMPOUNDMENT
	5. PIPELINE		5. TANK, BELOW GROUND		5. CHEM./PHYS. TREATMENT		5. MIDNIGHT DUMPING
	6. OTHER (specify):		6. OTHER (specify):		6. BIOLOGICAL TREATMENT		6. INCINERATION
					7. WASTE OIL REPROCESSING		7. UNDERGROUND INJECTION
					8. SOLVENT RECOVERY		8. OTHER (specify):
					9. OTHER (specify):		

E. SPECIFY DETAILS OF SITE ACTIVITIES AS NEEDED

V. WASTE RELATED INFORMATION

A. WASTE TYPE

☐ 1 UNKNOWN ☐ 2. LIQUID ☐ 3. SOLID ☐ 4. SLUDGE ☐ 5. GAS

B. WASTE CHARACTERISTICS

☐ 1 UNKNOWN ☐ 2. CORROSIVE ☐ 3. IGNITABLE ☐ 4 RADIOACTIVE ☐ 5 HIGHLY VOLATILE
☐ 6. TOXIC ☐ 7 REACTIVE ☐ 8. INERT ☐ 9 FLAMMABLE

☐ 10. OTHER (specify):

C. WASTE CATEGORIES

1. Are records of wastes available? Specify items such as manifests, inventories, etc. below.

2. Estimate the amount (specify unit of measure) of waste by category; mark 'X' to indicate which wastes are present.

a. SLUDGE	b. OIL	c. SOLVENTS	d. CHEMICALS	e. SOLIDS	f. OTHER
AMOUNT	AMOUNT	AMOUNT	AMOUNT	AMOUNT	AMOUNT
UNIT OF MEASURE	UNIT OF MEASURE	UNIT OF MEASURE	UNIT OF MEASURE	UNIT OF MEASURE	UNIT OF MEASURE
'X' (1) PAINT, PIGMENTS	'X' (1) OILY WASTES	'X' (1) HALOGENATED SOLVENTS	'X' (1) ACIDS	'X' (1) FLYASH	'X' (1) LABORATORY PHARMACEUT.
(2) METALS SLUDGES	(2) OTHER (specify):	(2) NON-HALOGNTD SOLVENTS	(2) PICKLING LIQUORS	(2) ASBESTOS	(2) HOSPITAL
(3) POTW		(3) OTHER (specify):	(3) CAUSTICS	(3) MILLING/ MINE TAILINGS	(3) RADIOACTIVE
(4) ALUMINUM SLUDGE			(4) PESTICIDES	(4) FERROUS SMLTG. WASTES	(4) MUNICIPAL
(5) OTHER (specify):			(5) DYES/INKS	(5) NON-FERROUS SMLTG. WASTES	(5) OTHER (specify):
			(6) CYANIDE	(6) OTHER (specify):	
			(7) PHENOLS		
			(8) HALOGENS		
			(9) PCB		

3. LIST SUBSTANCES OF GREATEST CONCERN WHICH MAY BE ON THE SITE (*place in descending order of hazard*).

4. ADDITIONAL COMMENTS OR NARRATIVE DESCRIPTION OF SITUATION KNOWN OR REPORTED TO EXIST AT THE SITE.

VI. HAZARD DESCRIPTION

A. TYPE OF HAZARD	B. POTENTIAL HAZARD (mark 'X')	C. ALLEGED INCIDENT (mark 'X')	D. DATE OF INCIDENT (mo., day, yr.)	E. REMARKS
1. NO HAZARD				
2. HUMAN HEALTH				
3. NON-WORKER INJURY/EXPOSURE				
4. WORKER INJURY				
5. CONTAMINATION OF WATER SUPPLY				
6. CONTAMINATION OF FOOD CHAIN				
7. CONTAMINATION OF GROUND WATER				
8. CONTAMINATION OF SURFACE WATER				
9. DAMAGE TO FLORA/FAUNA				
10. FISH KILL				
11. CONTAMINATION OF AIR				
12. NOTICEABLE ODORS				
13. CONTAMINATION OF SOIL				
14. PROPERTY DAMAGE				
15. FIRE OR EXPLOSION				
16. SPILLS/LEAKING CONTAINERS/ RUNOFF/STANDING LIQUIDS				
17. SEWER, STORM DRAIN PROBLEMS				
18. EROSION PROBLEMS				
19. INADEQUATE SECURITY				
20. INCOMPATIBLE WASTES				
21. MIDNIGHT DUMPING				
22. OTHER (*specify*):				

Continue On Reverse

Continued From Front

VII. PERMIT INFORMATION

A. INDICATE ALL APPLICABLE PERMITS HELD BY THE SITE.

☐ 1. NPDES PERMIT ☐ 2. SPCC PLAN ☐ 3. STATE PERMIT *(specify)*: _____

☐ 4. AIR PERMITS ☐ 5. LOCAL PERMIT ☐ 6. RCRA TRANSPORTER

☐ 7 RCRA STORER ☐ 8. RCRA TREATER ☐ 9. RCRA DISPOSER

☐ 10. OTHER *(specify)*: _____

B. IN COMPLIANCE?

☐ 1. YES ☐ 2. NO ☐ 3. UNKNOWN

4. WITH RESPECT TO *(list regulation name & number)*: _____

VIII. PAST REGULATORY ACTIONS

☐ A. NONE ☐ B. YES *(summarize below)*

IX. INSPECTION ACTIVITY *(past or on-going)*

☐ A. NONE ☐ B. YES *(complete items 1,2,3, & 4 below)*

1. TYPE OF ACTIVITY	2. DATE OF PAST ACTION *(mo., day, & yr.)*	3. PERFORMED BY: *(EPA/State)*	4. DESCRIPTION

X. REMEDIAL ACTIVITY *(past or on-going)*

☐ A. NONE ☐ B. YES *(complete items 1, 2, 3, & 4 below)*

1. TYPE OF ACTIVITY	2. DATE OF PAST ACTION *(mo., day, & yr.)*	3. PERFORMED BY: *(EPA/State)*	4. DESCRIPTION

NOTE: Based on the information in Sections III through X, fill out the Preliminary Assessment *(Section II)* information on the first page of this form.

Please print or type with ELITE type (12 characters /) in the unshaded areas only.

Form Approved OMB No. 158-S79016
G[illegible] No. 0246-EPA-OT

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTIFICATION OF HAZARDOUS WASTE ACTIVITY

INSTALLATION'S EPA I.D. NO.

I. NAME OF INSTALLATION

II. INSTALLATION MAILING ADDRESS

III. LOCATION OF INSTALLATION

REFERENCE NO. 12

PLEASE PLACE LABEL IN THIS SPACE

INSTRUCTIONS: If you received a preprinted label, affix it in the space at left. If any of the information on the label is incorrect, draw a line through it and supply the correct information in the appropriate section below. If the label is complete and correct, leave Items I, II, and III below blank. If you did not receive a preprinted label, complete all items. "Installation" means a single site where hazardous waste is generated, treated, stored and/or disposed of, or a transporter's principal place of business. Please refer to the INSTRUCTIONS FOR FILING NOTIFICATION before completing this form. The information requested herein is required by law *(Section 3010 of the Resource Conservation and Recovery Act).*

DETACH

FOR OFFICIAL USE ONLY

COMMENTS: C

INSTALLATION'S EPA I.D. NUMBER: F 1 (T/A C)

APPROVED:

DATE RECEIVED (yr., mo., & day):

I. NAME OF INSTALLATION

RIVER ROAD PLANT

II. INSTALLATION MAILING ADDRESS

STREET OR P.O. BOX: 3 P O BOX 1400

CITY OR TOWN: 4 SHEFFIELD — ST.: AL — ZIP CODE: 35660

III. LOCATION OF INSTALLATION

STREET OR ROUTE NUMBER: 5 RIVER ROAD

CITY OR TOWN: 6 MUSCLE SHOALS — ST.: AL — ZIP CODE: 35660

IV. INSTALLATION CONTACT

NAME AND TITLE *(last, first, & job title)*: 2 BENT, CHARLES ENV. ENGINEER

PHONE NO. *(area code & no.)*: 804-281-2918

V. OWNERSHIP

A. NAME OF INSTALLATION'S LEGAL OWNER: 8 REYNOLDS METALS COMPANY

B. TYPE OF OWNERSHIP *(enter the appropriate letter into box)*: M

F = FEDERAL
M = NON-FEDERAL

VI. TYPE OF HAZARDOUS WASTE ACTIVITY *(enter "X" in the appropriate box(es))*

- [ ] A. GENERATION
- [ ] B. TRANSPORTATION *(complete item VII)*
- [ ] C. TREAT/STORE/DISPOSE
- [ ] D. UNDERGROUND INJECTION

VII. MODE OF TRANSPORTATION *(transporters only – enter "X" in the appropriate box(es))*

- [ ] A. AIR
- [ ] B. RAIL
- [ ] C. HIGHWAY
- [ ] D. WATER
- [ ] E. OTHER *(specify)*:

VIII. FIRST OR SUBSEQUENT NOTIFICATION

Mark "X" in the appropriate box to indicate whether this is your installation's first notification of hazardous waste activity or a subsequent notification. If this is not your first notification, enter your Installation's EPA I.D. Number in the space provided below.

- [ ] A. FIRST NOTIFICATION
- [X] B. SUBSEQUENT NOTIFICATION *(complete item C)*

C. INSTALLATION'S EPA I.D. NO.: ALD000652693

IX. DESCRIPTION OF HAZARDOUS WASTES

Please go to the reverse of this form and provide the requested information.

I.D. – FOR OFFICIAL USE ONLY

S													T/A	C
W														1
1	2											13	14	15

IX. DESCRIPTION OF HAZARDOUS WASTES *(continued from front)*

A. HAZARDOUS WASTES FROM NON–SPECIFIC SOURCES. Enter the four–digit number from 40 CFR Part 261.31 for each listed hazardous waste from non–specific sources your installation handles. Use additional sheets if necessary.

1	2	3	4	5	6
7	8	9	10	11	12

B. HAZARDOUS WASTES FROM SPECIFIC SOURCES. Enter the four–digit number from 40 CFR Part 261.32 for each listed hazardous waste from specific industrial sources your installation handles. Use additional sheets if necessary.

13	14	15	16	17	18
19	20	21	22	23	24
25	26	27	28	29	30

C. COMMERCIAL CHEMICAL PRODUCT HAZARDOUS WASTES. Enter the four–digit number from 40 CFR Part 261.33 for each chemical substance your installation handles which may be a hazardous waste. Use additional sheets if necessary.

31	32	33	34	35	36
37	38	39	40	41	42
43	44	45	46	47	48

D. LISTED INFECTIOUS WASTES. Enter the four–digit number from 40 CFR Part 261.34 for each listed hazardous waste from hospitals, veterinary hospitals, medical and research laboratories your installation handles. Use additional sheets if necessary.

49	50	51	52	53	54

E. CHARACTERISTICS OF NON–LISTED HAZARDOUS WASTES. Mark "X" in the boxes corresponding to the characteristics of non–listed hazardous wastes your installation handles. *(See 40 CFR Parts 261.21 – 261.24.)*

☐ 1. IGNITABLE (D001) ☐ 2. CORROSIVE (D002) ☐ 3. REACTIVE (D003) ☐ 4. TOXIC (D000)

X. CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

SIGNATURE	NAME & OFFICIAL TITLE *(type or print)*	DATE SIGNED
W. D. Pipes	W. D. Pipes Plant Manager	14 JAN. 1983

GEOLOGICAL SURVEY OF ALABAMA

Philip E. LaMoreaux
State Geologist

PALEONTOLOGY AND STRATIGRAPHY DIVISION

Charles W. Copeland
Chief Geologist

CIRCULAR 47

GEOLOGY OF THE ALABAMA COASTAL PLAIN

A Guidebook

Charles W. Copeland, Editor

UNIVERSITY, ALABAMA

1968

REFERENCE NO. 13

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GEOLOGY OF THE ALABAMA COASTAL PLAIN

Charles W. Copeland, Editor

INTRODUCTION

The purpose of this guidebook is to provide an opportunity for visiting geologists to become acquainted with the general geology of the Coastal Plain of Alabama and view a part of the industrial development having its base in Alabama's natural resources. The trip from Tuscaloosa to Mobile presents a brief reconnaissance of marine and nonmarine sedimentary rocks ranging in age from Late Cretaceous to Pliocene (pl. 1).

The city of Tuscaloosa is located on a high terrace of the Black Warrior River near the inner edge of the East Gulf Coastal Plain physiographic province. In the Tuscaloosa vicinity, Coastal Plain sediments overlap the Pottsville Formation of Pennsylvanian age. Outcrops of the Pottsville form the Fall Line in this area and are exposed in the immediate vicinity of the river.

The Alabama Coastal Plain exhibits considerable relief which may be attributed to a combination of erosional processes, the variety of rock types, and associated structural elements. The province in Alabama stands in marked contrast to the relatively flat topography characterizing coastal areas in neighboring states. The relief in the Alabama Coastal Plain exposes a nearly complete sequence of Upper Cretaceous and Tertiary sediments (pl. 1).

The planned route of the field trip will cross six major physiographic subdivisions of the East Gulf Coastal Plain physiographic province. The outcrop area of deposits of the Upper Cretaceous Series is divided physiographically into three major divisions: the Fall Line Hills, the Black Prairie, and the Chunnennuggee Hills. The outcrop area of the Tertiary System is divided physiographically into the Southern Red Hills, the Lime Hills, and the Southern Pine Hills.

ACKNOWLEDGMENTS

Acknowledgment is made to C. M. Kilian, Executive Vice President of the Warrior-Tombigbee Development Association, for supplying information on the Warrior-Tombigbee Waterway; W. D. Hunt, Supervisor of Storage Terminals, and Chuck Crawford, Demopolis Terminal Supervisor, of the Tuloma Gas Products Co. for granting permission to visit the storage terminal at Demopolis and for supplying descriptive information; and to L. K. Schlumbrecht, Plant Manager and M. M. Reid, Production and Quality Superintendent, of the Lone Star Cement Co. at Demopolis for granting permission to tour the company's quarrying operation.

PHYSIOGRAPHY OF ALABAMA[1]

Alabama comprises an area of 51,000 square miles, and is about 300 miles from north to south and 200 miles from east to west. Altitudes range from sea level in the southwestern part of the State to 2,407 feet at Mt. Cheaha in east-central Alabama.

Alabama lies in parts of five physiographic provinces, as follows: Highland Rim Section of the Interior Low Plateaus, the Cumberland Plateau Section of the Appalachian Plateaus, the southernmost part of the Valley and Ridge, the Piedmont Upland Section of the Piedmont, and the East Gulf Coastal Plain Section of the Coastal Plain (fig. 2).

Descriptive information concerning the various physiographic divisions is from Adams (1926), Johnson (1933), Fenneman (1938), Monroe (1941), and Peirce (1966).

INTERIOR LOW PLATEAUS PROVINCE

HIGHLAND RIM SECTION

The Highland Rim Section in Alabama is divided into the Tennessee Valley, Little Mountain, and Moulton Valley.

The Tennessee Valley has a rolling surface with a maximum relief of about 400 feet, and lies about 600 feet above sea level. It is underlain chiefly by carbonate rocks ranging in age from Late Ordovician to Early Mississippian (pl. 1). Little Mountain is a range of hills rising about 200 feet above the Tennessee Valley that is capped by the resistant southward dipping Hartselle Sandstone. It is bounded on the south by Moulton Valley, an undulating open lowland ranging in altitude from 575 to 650 feet, and underlain exclusively by the Bangor Limestone of Late Mississippian age.

APPALACHIAN PLATEAUS PROVINCE

CUMBERLAND PLATEAU SECTION

The Cumberland Plateau Section in Alabama is a submaturely to maturely dissected upland, underlain largely by rocks of Pennsylvanian age. The upland lies at altitudes ranging from 1,500 to

[1] Prepared by James A. Drahovzal, Geologist, Geological Survey of Alabama.

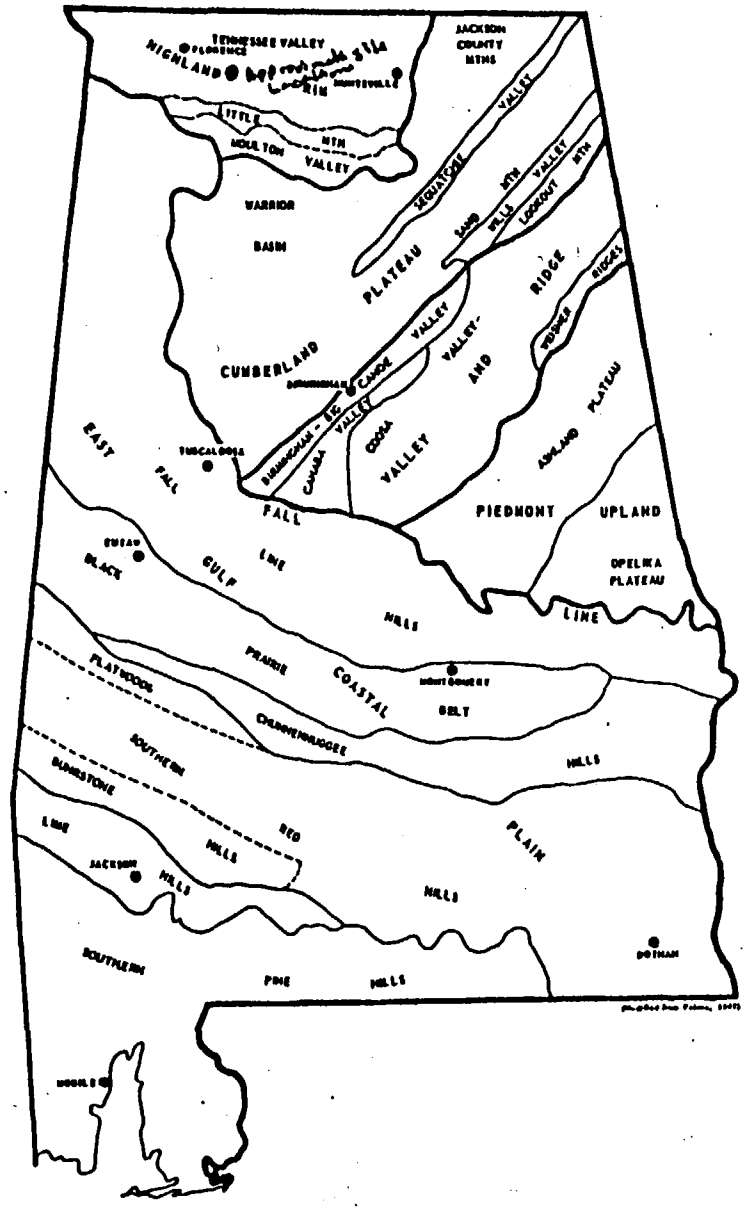

Figure 2.—Physiographic provinces of Alabama.

2,000 feet in the north to about 500 feet in the south, where it passes beneath the Coastal Plain. It is divided from east to west into the following units: Lookout Mountain, Wills Valley, Sand Mountain, Sequatchie Valley, Jackson County Mountains, and Warrior Basin.

Lookout Mountain and Sand Mountain are two synclinal flat-topped remnants of the Cumberland Plateau, underlain by clastic rocks of the Pottsville Formation, rising some 500 to 700 feet above the surrounding valleys. The intervening Wills and Sequatchie Valleys are narrow, faulted anticlinal valleys underlain predominantly by carbonate rocks ranging in age from Late Cambrian to Late Mississippian. The clastic material of the Red Mountain Formation and the chert of the Fort Payne Chert produce resistant hogbacks in both valleys. The Warrior Basin, a broad synclinal submaturely dissected plateau ranging in altitude from 1,100 feet in the north to 500 feet in the south, is underlain by the clastics of the Pottsville Formation. The Jackson County Mountains are submaturely dissected uplands capped by gently dipping rocks of the Pottsville, with carbonate rocks of Late Mississippian age underlying the intervening wide deep valleys. Relief in this area is as much as 1,000 feet.

VALLEY AND RIDGE PROVINCE

The Valley and Ridge province consists of a series of parallel ridges and valleys underlain by highly faulted and folded rocks of Cambrian to Pennsylvanian age. Local subdivisions from east to west include the Weisner Ridges, Coosa Valley, Coosa Ridges, Cahaba Valley, Cahaba Ridges, and the Birmingham-Big Canoe Valley.

The Weisner Ridges are a series of mountains as much as 2,130 feet high that are underlain by complexly faulted and folded quartzites and carbonates of predominantly Cambrian age. Immediately west of this area is the Coosa Valley, a broad valley of low relief lying 500 to 650 feet above mean sea level and underlain by complexly faulted and folded Paleozoic sedimentary rocks. The generally low relief of the valley is interrupted locally by low hills and ridges formed by rocks of resistant formations such as the

REFERENCE NO. 14

GEOLOGICAL SURVEY OF ALABAMA

Ernest A. Mancini
State Geologist

WATER RESOURCES DIVISION

James D. Moore
Chief

CIRCULAR 127B

DROUGHT-RELATED IMPACTS ON WATER USES IN NORTH ALABAMA

By

Stanley J. Wentz, Robert M. Baker,
and Blakeney Gillett

Prepared in Cooperation With the Tennessee Valley Authority

UNIVERSITY, ALABAMA

MAY 1986

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- Sequatchie Valley covers portions of Blount, DeKalb, Etowah, Jackson, and Marshall Counties. This valley is a northeast-southwest trending anticlinal valley that has an average altitude of about 600 feet and topographic relief of generally less than 100 feet.

- The Jackson Mountains encompass parts of Blount, Cullman, Jackson, Madison, Marshall, and Morgan Counties. This portion of the Plateau has an average altitude ranging from about 1,600 feet near the Tennessee State line to 1,000 feet at the area's southern edge. Relief commonly exceeds 300 feet.

Part of the Cumberland Plateau also extends into Franklin, Lawrence, Marion, and Winston Counties.

2. Coastal Plain, East Gulf Coastal Plain Section. This section of the study area is characterized by maturely eroded uplands and mature stream valleys (Harkins and others, June 1980, page 10) and extends into portions of Colbert, Franklin, Lauderdale, Marion, and Winston Counties. Local relief in this part of the study area ranges up to about 200 feet with a maximum altitude of about 1,000 feet (Peace, 1963, page 4).

3. Interior Low Plateau, Highland Rim and Nashville Basin Sections. The topography of the Highland Rim varies from gently rolling to almost level, except near the outlying portions of the Cumberland Plateau. This section encompasses portions of Colbert, Cullman, Lauderdale, Lawrence, Limestone, Madison, and Morgan Counties. It is underlain by rocks of Mississippian age, primarily limestone, which in some places contain extensive chert and are subject to dissolution by chemical weathering. Consequently, this section is characterized by caves, springs, and other landforms typical of karst topography. Altitudes range from about 800 to 1,000 feet north of the Tennessee River and 600 to 700 feet south of the river. Slopes in the Highland Rim are generally in the range of 1 to 15 percent.

   The Nashville Basin includes part of Limestone County and is characterized by knobby, steep-sided hills; narrow elongated drainage divides capped by the Fort Payne Chert; and narrow valleys underlain by the Chickamauga Limestone. Altitudes in this section range from about 550 to 850 feet. (McMaster and Harris, 1963, page 6).

4. Valley and Ridge, Tennessee Section. This portion of the study area is characterized by narrow, parallel valleys with small streams and alternating ridges of erosion-resistant rock. It extends into DeKalb and Etowah Counties. Local relief ranges from about 100 to 700 feet. (Harkins and others, June 1980, page 10)

In general, the study area's topography ranges from rolling hills in the eastern and central portions of the area to relatively flat land areas along the study area's western edge (Alabama Water Improvement Commission, August 1975, page IV-1).

The Ketona Dolomite of Cambrian age has less chert than the overlying Knox. The residuum derived from the Ketona is still sufficiently porous to store ground water. The only known outcrop is on the northwest side of Murphrees Valley, south of Oneonta. Wells drilled in low-lying areas of the outcrop will furnish adequate quantities of water for domestic use. Water quality is similar to that of water from the overlying dolomites.

The Conasauga Formation is not an important aquifer in the county. Little information is available for water wells completed in this formation.

Colbert County

Ground water in Colbert County primarily occurs in Quaternary, Cretaceous, and Mississippian rocks. Although older rocks are present, they are not considered aquifers. The general lithology and water-bearing properties of the formations are given in table 6.

Table 6.--General lithology and water-bearing properties of geologic units in Colbert County[1]

System	Geologic unit	Thickness (feet)	Lithology	Water-bearing properties
Quaternary	Residuum	0-100+	Clay, unstratified, with minor amounts of sand and gravel as lenses and beds.	Yields small quantities (10 gpm or less) of water to dug wells in many areas. Quality is poor in places.
Late Cretaceous	Tuscaloosa Group	100+	Gravel, stratified, with clay and sand lenses.	Yields small (5 to 10 gpm) quantities of good quality water to wells and springs. Springs are small, but numerous.
Mississippian	Bangor Limestone	170	Limestone, gray, oolitic, and crystalline; and shale, light-gray and calcareous.	Yields small quantities (10 gpm) of very hard water from cavities in limestone.
	Hartselle Sandstone	70-160	Sandstone, tan hard, silty,	Yields 5 gpm or less of good

Table 6.--General lithology and water-bearing properties of geologic units in Colbert County[1] - Continued

System	Geologic unit	Thickness (feet)	Lithology	Water-bearing properties
			and thin-bedded.	quality soft water to wells and springs.
	Pride Mountain Formation	3-250	Shale with interbeds of sandstone and limestone.	Yields small quantities (less than 5 gpm) of water to wells. Quality is generally poor. Water may have a sulfurous odor.
	Tuscumbia Limestone	100-200	Limestone, crystalline, gray, medium-bedded, and hard; with some chert.	Generally yields over 50 gpm of water to wells and springs. As much as 500 gpm are available in area of outcrop, particularly Spring Creek Valley. Water is generally very hard.
	Fort Payne Chert	190	Limestone, crystalline, white to gray, and hard; with abundant chert.	Yields of 10 to 100 gpm are common. Yields exceeding 500 gpm per well are available in parts of Spring Creek Valley and probably in other places not tested. Water is hard.

1. This table was adapted from County Report 10, "Geology and Ground-Water Resources of Colbert County, Alabama," which was prepared by the Geological Survey of Alabama in 1963. The table lists only those geologic units down through the oldest aquifer in the county.

Quaternary deposits cover most of the county. These deposits form a thick mantle of residuum that overlies bedrock. Due to erosion, the residuum varies in thickness; the thinner deposits usually occur in stream valleys such as Spring and Bear Creek Valleys. In the northeastern part of the county, it is more than 100 feet thick over an area of several square miles.

A large number of shallow dug or drilled wells tap the residuum in Colbert County, mostly in areas underlain by the Tuscumbia Limestone. Well depths are generally less than 50 feet. Some of these wells do not yield adequate water supplies for domestic needs, approximately 10 gpm. In addition, the residuum is more susceptible to contamination or pollution than are deeper aquifers. Based on field analyses of 60 samples of water obtained from the residuum, the average chloride content is 32 ppm and hardness as $CaCO_3$ averages 121 ppm (Harris, Moore, and West, 1963), which is considered hard.

The Tuscaloosa Group of Cretaceous age overlies indurated Mississippian rocks and crops out in the southern and western areas of the county. Along the western edge of the county, it is more than 100 feet thick. It caps ridges, hills, and larger upland areas at altitudes ranging from 500 to 650 feet above sea level. Yields of water to wells from the Tuscaloosa are generally small, averaging about 5 to 10 gpm. However, the large number of perennial springs indicates a good potential source of ground water, especially in the areas where thicker deposits occur. Well depths average 61 feet. The ground water is of good chemical quality. Based on 27 field analyses, the average chloride content was 8 ppm and hardness averaged 80 ppm as $CaCO_3$ (Harris, Moore, and West, 1963), which is considered moderately hard.

The Mississippian formations in the county are the Bangor Limestone, Hartselle Sandstone, Pride Mountain Formation, Tuscumbia Limestone, and Fort Payne Chert. The Bangor crops out westward from the vicinity of Littleville in southern Colbert County. In the southwestern part of the county, in areas of considerable relief, the Bangor crops out in narrow bands around ridges capped by the Tuscaloosa Group. The maximum known thickness of the Bangor in the county is approximately 170 feet. A relatively small number of wells obtain water from the upper part of the formation. Well depths range from less than 20 to more than 400 feet, averaging 96 feet. Most are adequate for domestic supplies. Further testing is needed to determine the full potential of the Bangor in Colbert County. Based on analyses of 21 samples, the average chloride content was 27 ppm and hardness averaged 229 ppm as $CaCO_3$ (Harris, Moore, and West, 1963). The water is considered very hard.

Underlying the Bangor is the Hartselle Sandstone. This thin-bedded sandstone crops out in an area of about 100 square miles in the southeastern and central parts of the county. The Hartselle is estimated to be 160 feet thick near the southern edge of the county and thins to about 73 feet along the northern edges of the outcrop (Thomas, 1972). Due to the formation's low permeability, it is not considered a good aquifer. Yields of 5 gpm or less to wells and springs are most common. Well depths average less than 100 feet.

Based on 91 analyses, the average chloride content is 15 ppm and the average hardness is 55 ppm as $CaCO_3$ (Harris, Moore, and West, 1963). The water is considered soft.

The Pride Mountain Formation underlies the Hartselle Sandstone and is mostly shale with thin interbeds of sandstone and limestone. The Pride Mountain varies in thickness and areal distribution in Colbert County. It crops out in the southeastern and west-central parts of the county. Known thicknesses range from a few feet near the northern extent of its outcrop to 250 feet in the subsurface near the Franklin-Colbert County line. Wells completed in the formation average 116 feet in depth. It is not considered a good aquifer because of the low well yields (less than 5 gpm) and the poor chemical quality of the water.

The Tuscumbia Limestone crops out over large areas in the northern parts of the county. In most parts of the county, the formation has been deeply weathered and less than 100 feet of limestone remains. The maximum thickness is about 200 feet in the southern part of the county. Throughout most of its outcrop, the Tuscumbia is a productive aquifer, commonly yielding over 100 gpm to drilled wells. Ground water occurs in solution openings along fractures and bedding planes. However, in the southern part of the county where the formation is covered by younger rocks, solution openings are poorly developed and the formation will yield little or no water to wells. Wells may be as much as 500 feet deep; however, most are less than 200 feet deep. In Spring Creek Valley near Tuscumbia, test drilling and pumping-test data indicate the existence of extensive solution openings in the Tuscumbia. These openings are capable of yielding 500 gpm to wells. Many springs issue from the Tuscumbia. The largest is Tuscumbia (Big) Spring, with a minimum discharge of about 6 million gallons per day (MGD) and a maximum of more than 70 MGD. It is the source of the public water supply for the city of Tuscumbia. Ground water in the Tuscumbia is generally of good chemical quality, although it may be very hard. The results of field analyses of 307 samples indicate an average chloride content of 15 ppm and an average hardness of 192 ppm as $CaCO_3$ (Harris, Moore, and West, 1963), which is considered very hard.

Underlying the Tuscumbia Limestone is the Fort Payne Chert, the oldest Mississippian formation in Colbert County. It underlies the entire county and crops out along the southern bluffs of the Tennessee River and for short distances upstream along some of the major tributaries. The Fort Payne is relatively uniform in thickness, averaging approximately 190 feet thick in the subsurface. Like the Tuscumbia, the Fort Payne is a good aquifer. Ground water occurs in solution openings along fractures and bedding planes. The best developed openings are in areas where the overlying rocks are less than 200 feet thick, as in Spring Creek Valley near Tuscumbia. Variable quantities of water are available from the Fort Payne; however, even the smallest well yields are adequate for domestic supply. Well depths average 150 feet. In some areas, yields of 500 gpm per well are obtainable. The chemical quality of ground water from the Fort Payne is generally good. Based on field analyses of 100 samples, the average chloride content is 8 ppm and the average hardness is 124 ppm as $CaCO_3$ (Harris, Moore, and West, 1963). The water is considered hard.

REFERENCE NO. 15

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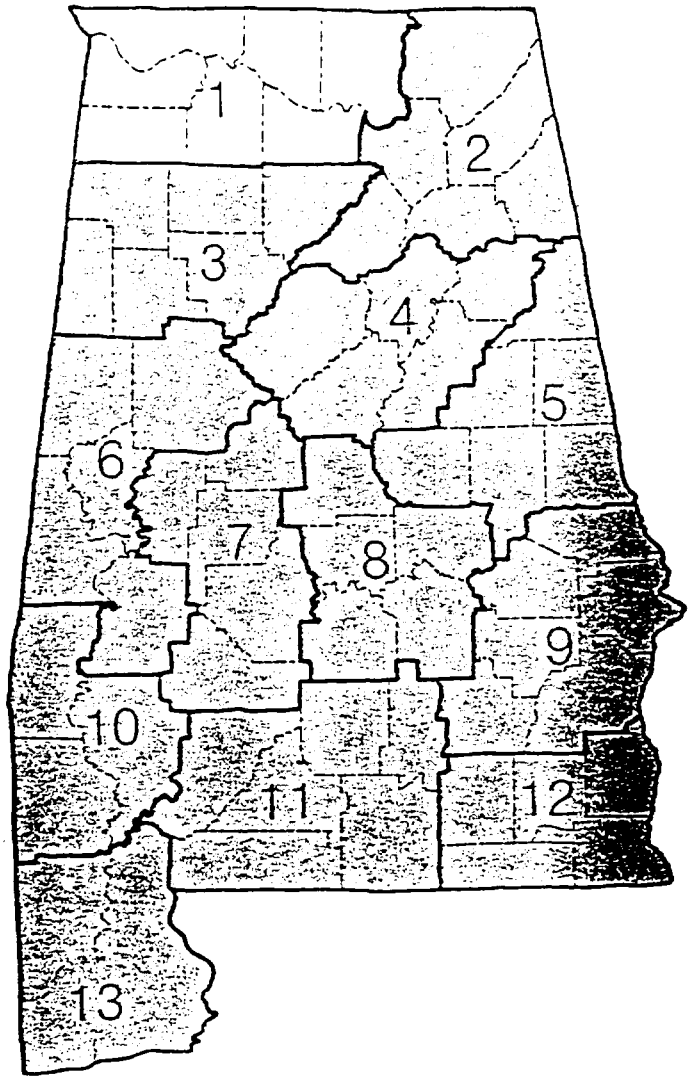

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GEOHYDROLOGY AND SUSCEPTIBILITY OF MAJOR AQUIFERS TO SURFACE CONTAMINATION IN ALABAMA; AREA 1

by C. R. Bossong and Wiley F. Harris

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CONVERSION FACTORS

For use of readers who prefer to use metric (International System) units, conversion factors for inch-pound units used in this report are listed below:

Multiply inch-pound unit	By	To obtain metric unit
inch (in.)	25.4	millimeter (mm)
foot (ft)	0.3048	meter (m)
mile (mi)	1.609	kilometer (km)
cubic foot per second per square mile [$(ft^3/s)/mi^2$]	0.01093	cubic meter per second per square kilometer [$(m^3/s)/km^2$]
gallon per minute (gal/min)	0.06308	liter per second (L/s)
million gallons per day (Mgal/d)	0.04381	cubic meter per second (m^3/s)

Sea level: In this report "sea level" refers to the National Geodetic Vertical Datum of 1929 (NGVD of 1929)--a geodetic datum derived from a general adjustment of the first-order level nets of both the United States and Canada, formerly called "Mean Sea Level of 1929."

features such as caves, sinkholes, and large springs which occur in the area. Ordovician, Silurian, Devonian, Pennsylvanian and Cretaceous formations also crop out in the area but are not as prominent as the Mississippian formations.

Ordovician, Silurian, and Devonian Systems

Relatively thin units of Ordovician, Silurian, and Devonian rocks crop out along the northern boundary of the area, especially in the Elk River valley. These rocks dip gently to the south.

Rocks of Ordovician and Silurian age, represented by the Sequatchie Formation and the Brassfield Limestone, respectively, rarely crop out in the study area. They are generally thin fossiliferous limestones. Rocks of Devonian age represented by the Chattanooga Shale are overlain by the Mississippian Fort Payne Chert. The Chattanooga Shale is generally characterized as a dark gray to black thinly bedded shale with occasional sandstone at the base. It is typically about 10 feet thick but may be as thick as 40 feet. Although thin, it is an easily recognized stratigraphic unit that occurs in several southeastern States.

Mississippian System

The Mississippian System includes several formations that crop out in the study area. They are, from oldest to youngest: Fort Payne Chert, Tuscumbia Limestone, Monteagle Limestone, Pride Mountain Formation, Hartselle Sandstone, Bangor Limestone, Parkwood Formation, and Pennington Formation. These formations are primarily carbonate rocks; however, some are silicate based clastic rocks. These clastic formations which crop out principally in the eastern, western, and southwestern parts consist chiefly of shale, sandstone, clay, and mudstone. They are: Pride Mountain Formation, Hartselle Sandstone, Parkwood Formation, and Pennington Formation. They represent silicate based clastic facies that grade laterally, towards the center of the area, into carbonate units. The Parkwood and Pennington Formations are not included in figure 3 because their outcrops are too small. Figure 4 is a schematic diagram showing stratigraphic relations; however, the reader is referred to Thomas (1972) for detailed stratigraphic information. The carbonate units are discussed individually, from oldest to youngest.

Fort Payne Chert

The Fort Payne chert crops out over much of the study area north of Little Mountain and is overlain by the Tuscumbia Limestone. The Fort Payne Chert is mapped with the Tuscumbia and Monteagle Limestones on the geologic map (fig. 3). The unit is a dark gray siliceous limestone with abundant, occasionally as much as 50 percent, beds of dark gray nodular chert. Coarse bioclastic lithology occurs locally but is generally restricted to lenses. A consistent deposit of residual weathered material, referred to as regolith, mantles the surface of the Fort Payne. The regolith may be as much as 100

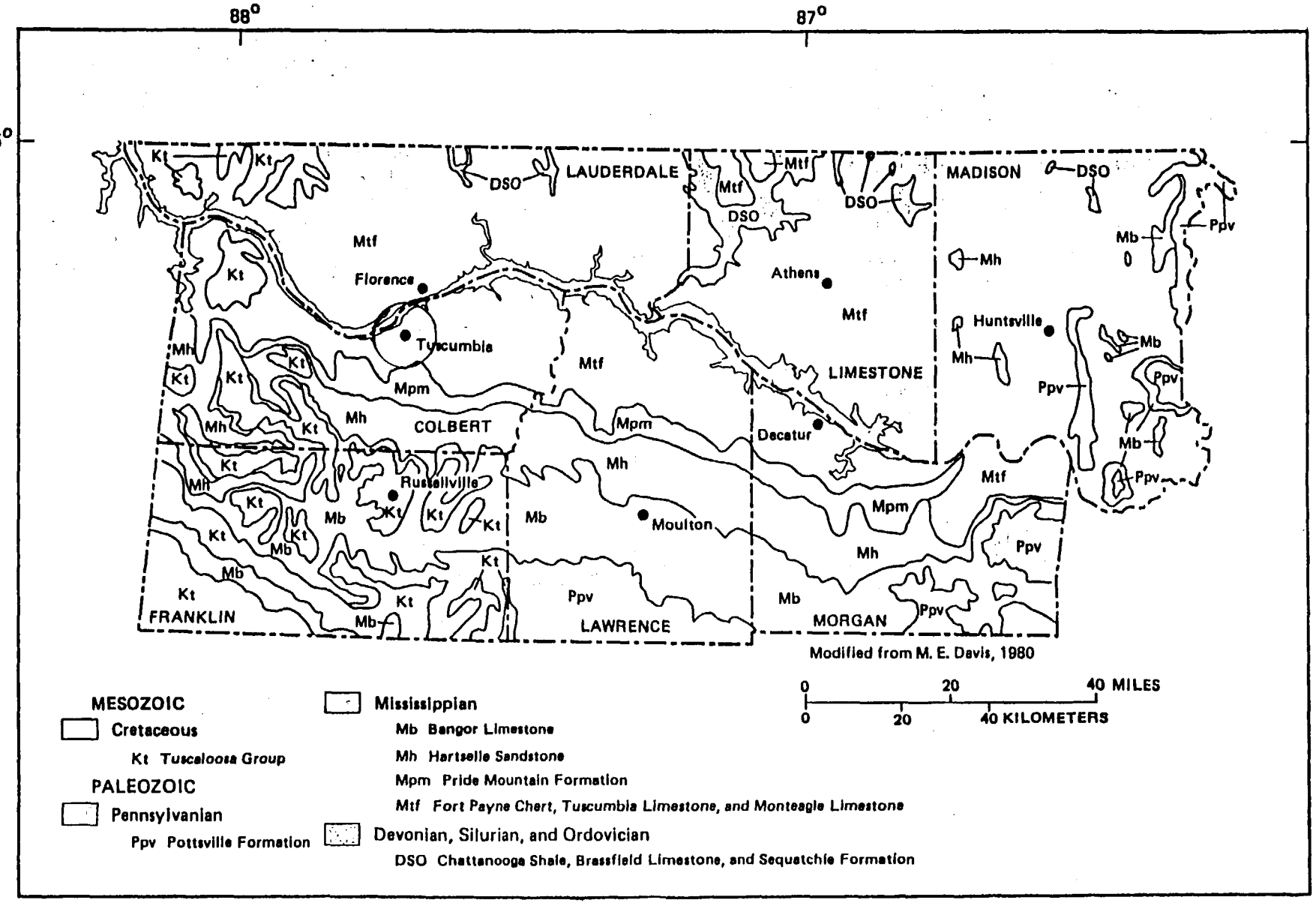


Figure 3.—Generalized surface geology in the study area.

feet thick and is mostly clay; however, it may, especially near bedrock, contain significant layers of chert rubble. Many solutional features are present in the Fort Payne.

Tuscumbia Limestone

The Tuscumbia Limestone crops out over much of the study area north of Little Mountain in the Highland Rim section. The Tuscumbia consists principally of bedded bioclastic limestone with abundant chert nodules and, in places, beds of light gray chert. Limestone beds are locally as much as 10 or more feet thick but are typically about 1 foot thick. Massive cross-bedded zones of very coarse bioclastic limestones occur locally. The formation thickness is about 200 feet. Regolith on the Tuscumbia is similar to that of the Fort Payne but is generally less cherty. Many solutional features are present in the Tuscumbia and weathered exposures commonly show signs of vertically controlled solution.

Monteagle Limestone

The Monteagle Limestone crops out along the eastern boundary in the Cumberland Plateau section and its outliers, and also in a relatively extensive area in the southeastern portion of the study area. It is overlain by the Hartselle Sandstone and the Bangor Limestone, and grades laterally to the southwest into the Pride Mountain Formation. The lithology and general character of the Monteagle is very similar to the Bangor Limestone, described below. The formation thickness is about 200 feet.

Bangor Limestone

The Bangor Limestone crops out in the eastern part of the study area and in a broad east-west band south of Little Mountain. It is overlain by the Pottsville Formation and grades laterally to the east into the Pennington Formation and to the southwest into the Parkwood Formation. The lithology of the Bangor consists principally of bioclastic and oolitic limestone with minor amounts of clay and dolomitic limestone. The distribution of these lithologies has been described in detail by Thomas (1972). The formation thickness varies from 350 to 500 feet and thickens, somewhat, to the west. South of Little Mountain, where the formation crops out in the generally flat Highland Rim section, regolith that is usually less than 20 feet thick mantles its surface. Many significant solutional features occur in the Bangor where it crops out in the Cumberland Plateau section.

Pennsylvanian System

Rocks of Pennsylvanian age represented by the Pottsville Formation crop out in the eastern and southern parts of the study area. The rocks consist principally of quartzose sandstone, shale, conglomerate, and minor amounts of

coal. These units are tightly cemented with ferruginous and calcite cements. They may be up to 300 feet thick and commonly have bedding plane fractures and vertical joints.

Cretaceous System

Rocks of Cretaceous age, represented by the Coker Formation of the Tuscaloosa Group, crop out in the western and southwestern parts of the study area (fig. 3). They consist of unconsolidated sand, gravel, and clay, dip gently to the west and southwest, and are as much as 170 feet thick. The contact between the Tuscaloosa Group and the underlying units of Paleozoic age represents a major disconformity.

HYDROLOGY

The source of water in the study area is precipitation which averages about 52 inches annually (U.S. Department of Commerce, 1984b). The amount of precipitation transported out of the area through streamflow, referred to as runoff, is about 22 inches per year. Most remaining precipitation is returned to the atmosphere by evapotranspiration processes. A significant amount of the annual runoff occurs in direct response to precipitation during storms. The actual amount of direct runoff in the study area has not been determined; however, it has been estimated to be about 10 inches for the Tennessee Valley as a whole. This amount is probably representative for many streams in the study area (Zurawski, 1978). The remaining runoff is discharged to streams from aquifers and will be referred to as baseflow.

A very significant hydrologic characteristic of the study area is the relatively high baseflow. Bingham (1982) reported that recession indexes for streams in the study area, which are directly related to transmissivity and storage characteristics of aquifers, are as much as three or more times the recession indexes for other areas of Paleozoic bedrock in Alabama.

Actual runoff rates for indigenous streams in the study area range from about 20 to 30 inches. These differences can be related to geologic and physical features that affect the amount of water that infiltrates and percolates through surficial deposits to recharge aquifers.

In areas dominated by the Pottsville Formation where bedrock is indurated and tightly cemented, soils are relatively thin and slopes are relatively steep. These areas shed more water and have higher runoff rates and lower baseflow than areas dominated by Mississippian carbonate rocks which are indurated but have thick residual mantles and solutional features, and crop out extensively in gentle sloping areas. Most precipitation in Pottsville areas runs off directly and has little opportunity to recharge aquifers; consequently, baseflow for streams draining Pottsville areas, such as the basin upstream from Paint Rock River, is low. Not as much precipitation runs off directly during storms in areas of Mississippian carbonate rocks. However, much of the precipitation which does not run off directly recharges aquifers and is discharged to streams such as the basin upstream from Flint River as relatively high baseflow (table 1). (See figure 5.)

Tuscumbia-Fort Payne Aquifer

The Tuscumbia-Fort Payne aquifer includes the Monteagle Limestone, Tuscumbia Limestone, and Fort Payne Chert. The aquifer name emphasizes the prominence of the Tuscumbia Limestone and the Fort Payne Chert which are the most significant sources of water within it. The Monteagle Limestone is a significant source of water in only the southeastern part of the study area. The Tuscumbia-Fort Payne aquifer is the major aquifer for all of the study area north of Little Mountain and is used for public supplies throughout its outcrop area. The aquifer underlies the entire study area, but has not been developed south of Little Mountain because of the availability of water from the overlying Bangor aquifer. The aquifer is recharged throughout its outcrop by water which infiltrates and percolates through the regolith. The base of the aquifer is the contact with the underlying Chattanooga Shale.

Water in the Tuscumbia-Fort Payne aquifer is partially confined because of the lower hydraulic conductivity of the overlying residual mantle. The Tuscumbia-Fort Payne aquifer is the most widely-used aquifer for public supply in the study area (table 2). Cavernous porosity is present many places where dissolution has enlarged joints and bedding-planes. Wells which penetrate these features produce large quantities of water. The Williams well (57), for instance, is routinely pumped at rates greater than 3,200 gal/min.

Bangor Aquifer

The Bangor aquifer includes the Bangor Limestone and the underlying Hartselle Sandstone. Its thickness and outcrop area is essentially the same as that described for the Bangor Limestone in the geology section although minor differences occur in the vicinity of the Little Mountain. The Hartselle Sandstone is a significant source of water in only a small part of the study area.

The aquifer is recharged throughout its outcrop area by water which infiltrates and percolates through the regolith. The area of use for water supplies is generally restricted to its outcrop area. The base of the aquifer is the contact with underlying formations (Pride Mountain Formation or Monteagle Limestone).

Water in the Bangor aquifer, like the that in the Tuscumbia-Fort Payne aquifer, typically is partially confined. Solutionally enlarged fractures in the Bangor Limestone may be significant sources of water but, the aquifer is not used extensively in the study area.

Tuscaloosa Aquifer

The Tuscaloosa aquifer is in the Tuscaloosa Group in the study area. Its thickness and outcrop area conforms to the description of the Tuscaloosa Group in the Cretaceous System presented in the geology section. The aquifer is not overlain by any other formation in the study area and its outcrop is also its

REFERENCE NO. 16

TELEPHONE CONTACT SUMMARY
DYNAMAC CORPORATION

Call made by: Mitch Cohen Signature/Date: 4/2/93 Mitch Cohen
On (Date): April 2, 1993 Facility: Reynolds Metal Co.
River Rd. Plant
At (Time): 1215 CERCLIS or EPA ID No:ALD000652693

Person(s) contacted: Don Simmons
Title/Position: Environmental Health Director
Phone: (205)383-1231
Organization: Colbert County Department
Address (City/State) Muscle Shoals, Alabama

GENERAL SUBJECT

Mr. Simmons told Mitch Cohen that there were very few private wells within the study area. Those that do exist are drilled to a depth of approximately 750 feet below land surface

REFERENCE NO. 17

TELEPHONE CONTACT SUMMARY

CALL MADE BY: Betty Ann Pruner, Dynamac Corporation REGION: IV

Betty Ann Pruner 3/16/92

DATE: 16 March 1992

TIME: 1000

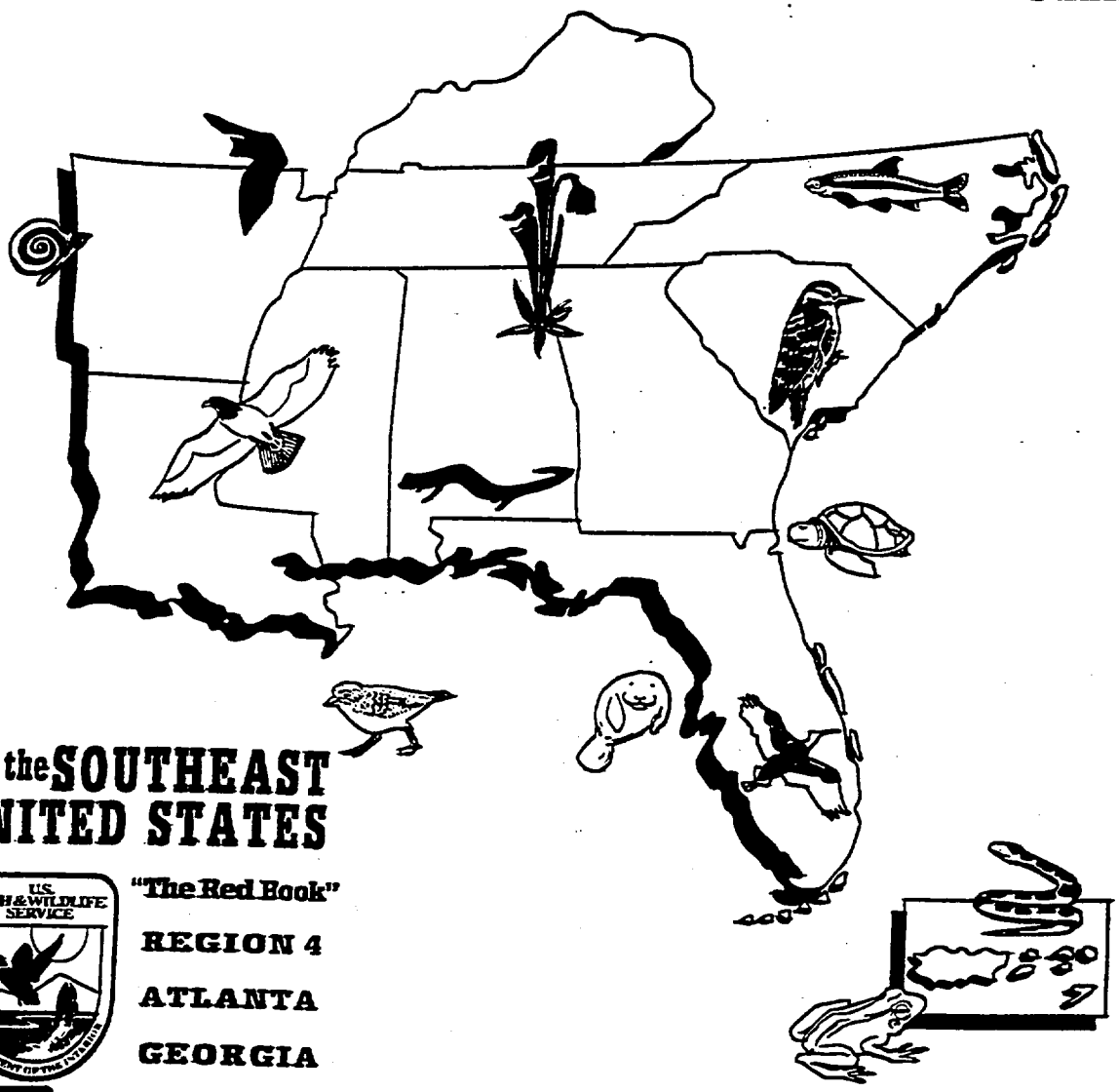
PERSON CONTACTED

NAME	David Hayden
TITLE	Assistant Chief of Wildlife
PHONE NO.:	(205) 242-3469
ORGANIZATION:	Alabama Department of Fish and Wildlife Montgomery, Alabama

I asked David Hayden about the Sevenmile Island Wildlife Management Area. He said the area was used as a game and fishery reserve. Hunting is controlled in the management area. The state-run management area has been in existence for many years. The Tennessee Valley Authority owns the land. A caretaker maintains the property. He said that bald eagles are seen on the island frequently.

REFERENCE NO. 18

ENDANGERED & THREATENED SPECIES



of the SOUTHEAST UNITED STATES

U.S. FISH & WILDLIFE SERVICE

"The Red Book"

REGION 4

ATLANTA

GEORGIA

9300991

09/30/91

Federally Listed Species By State

ALABAMA

(E=Endangered; T=Threatened; CH=Critical Habitat determined)

Mammals	General Distribution
Bat, gray (*Myotis grisescens*) - E	Extreme North, East
Bat, Indiana (*Myotis sodalis*) - E	Extreme North ✓
Manatee, West Indian (*Trichechus manatus*) - E	Coastal waters
Mouse, Alabama beach (*Peromyscus polionotus ammobates*) - E,CH	Coastal; Baldwin
Mouse, Perdido Key beach (*Peromyscus polionotus trissyllepsis*) - E,CH	Perdido Key
Panther, Florida (*Felis concolor coryi*) - E	Entire state ✓
Whale, finback (*Balaenoptera physalus*) - E	Coastal waters
Whale, humpback (*Megaptera novaeangliae*) - E	Coastal waters
Whale, right (*Eubalaena glacialis*) - E	Coastal waters
Whale, sei (*Balaenoptera borealis*) - E	Coastal waters
Whale, sperm (*Physeter catodon*) - E	Coastal waters

Birds	
Eagle, bald (*Haliaeetus leucocephalus*) - E	Entire State ✓
Falcon, American peregrine (*Falco peregrinus anatum*) - E	North
Falcon, Arctic peregrine (*Falco peregrinus tundrius*) - T	Entire State ✓
Plover, piping (*Charadrius melodus*) - T	Coast
Warbler, Bachman's (*Vermivora bachmanii*) - E	Entire State ✓
Wood, stork (*Mycteria americana*) - E	Entire State ✓
Woodpecker, ivory-billed (*Campephilus principalis*) - E	South, West Central
Woodpecker, red-cockaded (*Picoides* [=*Dendrocopos*] *borealis*) - E	Entire State ✓

Reptiles	
Alligator, American (*Alligator mississippiensis*) - T (S/A)*	Coastal plain

*Alligators are biologically neither endangered nor threatened. For law enforcement purposes they are classified as "Threatened due to Similarity of Appearance." Alligator hunting is regulated in accordance with State law.

	General Distribution
Snake, eastern indigo (*Drymarchon corais couperi*) - T	South
Tortoise, gopher (*Gopherus polyphemus*) - T	Choctaw, Mobile, Washington Counties
Turtle, Alabama red-bellied (*Pseudemys alabamensis*) - E	Mobile River system; Baldwin and Mobile Counties
Turtle, flattened musk (*Sternotherus depressus*) - T	Upper Black Warrior River system
Turtle, Kemp's (Atlantic) ridley (*Lepidochelys kempii*) - E	Coastal waters
Turtle, green (*Chelonia mydas*) - T	Coastal waters
Turtle, hawksbill (*Eretmochelys imbricata*) - E	Coastal waters
Turtle, leatherback (*Dermochelys coriacea*) - E	Coastal waters
Turtle, loggerhead (*Caretta caretta*) - T	Coastal waters
Amphibians	
Salamander, Red Hills (*Phaeognatus hubrichti*) - T	Covington, Conecuh, Butler, Crenshaw, Monroe Counties
Arthropods	
Shrimp, Alabama cave (*Palaemonias alabamae*) - E	Madison County
Fishes	
Cavefish, Alabama (*Speoplatyrhimus poulsoni*) - E, CH	Lauderdale County ✓
Darter, boulder (*Etheostoma* (*Nothonotus*) sp - E	Lower Elk River System, Limestone County
Darter, goldline (*Percina aurolineata*) - T	Cahaba River System
Darter, slackwater (*Etheostoma boschungi*) - T, CH	Madison, Lauderdale, Limestone Counties ✓

	General Distribution
Darter, snail (Percina tanasi) - T	Madison and Jackson Counties (Paint Rock R.)
Darter, Watercress (Etheostoma nuchale) - E	Jefferson County
Shiner, blue (Cyprinella caerulea) -T	Upper Coosa River System: Weogufka and Choccolocco Creeks, lower reach of Little River
Sturgeon, Gulf (Acipenser axyrhynchus) - T	Alabama River System, Mobile River System
Mollusks	
Mussel, Alabama lamp pearly (Lampsilis virescens) - E	Paint Rock River, Estill Fork, Hurricane Creek, Larkin Fork
Mussel, fine-rayed pigtoe pearly (Fusconaia cuneolus) - E	Paint Rock River
Mussel, inflated heelsplitter - Potamilius inflatus - T	Tombigbee and Black Warrior Rivers
Mussel Judge Tait's (Pleurobema taitianum) - E	Tombigbee River (bendway in Sumter County), Sipsey River
Mussel, Marshall's (Pleurobema marshalli) - E	Tombigbee River (bendway in Sumter County)
Mussel, orange-footed pimpleback (Plethobasus cooperianus) - E	Tennessee River ✓
Mussel, pale lilliput pearly (Toxolasma [Carunculina] cylindrella) - E	Paint Rock River, Estill Fork, Hurricane Creek
Mussel, penitent (Epioblasma [= Dysnomia] penita) - E	Tombigbee River (bendway in Sumter County), and Buttahatchie River
Mussel, pink mucket pearly (Lampsilis obiculata) - E	Tennessee and Paint Rock Rivers ✓
Mussel, rough pigtoe pearly (Pleurobema plenum) - E	Tennessee River ✓

	General Distribution
Mussel, shiny pigtoe pearly (*Fusconaia edgariana*) - E	Paint Rock River
Mussel, stirrup shell (*Quadrula stapes*) - E	Tombigbee River (bendway in Sumter County), and Sipsey River
Snail, Tulotoma (*Tulotoma magnifica*) - E	Coosa River tributaries (Kelly Creek, St. Clair and Shelby Counties; Weogufka and Hatchet Creeks, Coosa County; Ohatchee Creek, Calhoun County; and between Jordan Dam and Wetumpka, Elmore County)
Plants	
Amphianthus pusillus (little amphianthus) - T	Randolph, Chambers Counties
Clematis socialis (Alabama leather flower) - E	St. Clair, Cherokee Counties
Dalea foliosa (= *Petalostemum foliosum*) Leafy prairie-clover - E	Franklin, Morgan, Lawrence, and Jefferson Counties
Marshallia mohrii (Mohr's Barbara's buttons) - T	Bibb, Cherokee, Etowah Counties
Phyllitis scolopendrium var. *Americana* (American hart's tongue fern) - T	Jackson, Morgan Counties
Ptilimnium nodosum (harperella) - E	Dekalb County
Sagittaria secundifolia (Kral's water plaintain) - T	Dekalb, Cherokee Counties
Sarracenia oreophila (green pitcher plant) - E	Cherokee, Dekalb, Jackson, Marshall, Etowah Counties
Sarracenia rubra ssp. *alabamensis* Alabama canebrake pitcher-plant - E	Autauga, Chilton, Elmore Counties
Trillium reliquum (relict trillium) - E	Henry, Lee Counties
Xyris tennesseensis (Tennessee yellow-eyed grass) - E	Franklin County

REFERENCE NO. 19

TELEPHONE CONTACT SUMMARY
DYNAMAC CORPORATION

Call made by:Mitch Cohen Signature/Date: 2/2/93 Mitch Cohen
On (Date):Feb. 2, 1993 Facility: Reynolds Metal Co. River Rd.
At (Time):1600 CERCLIS or EPA ID No:ALD000652693

Person(s) contacted: Roger Burcham
Title/Position: Manager
Phone: 205-386-9260
Organization: Muscle Shoals Water Department
Address (City/State): Muscle Shoals, Alabama

GENERAL SUBJECT

Water intakes and distribution for the Muscle Shoals Water Department

CONVERSATION SUMMARY

Mr. Burcham told Mitch Cohen that the Muscle Shoals Water Department uses one intake located in Fleet Hollow, just south of Wilson Dam. Mr. Burcham added that the Muscle Shoals system serves 4600 connections and an additional 2400 rural connections which are comprised of Colbert County and Spring Valley users.

REFERENCE NO. 20

TELEPHONE CONTACT SUMMARY
DYNAMAC CORPORATION

Call made by:Mitch Cohen Signature/Date: Mitch Cohen 2/3/93
On (Date):Feb. 3, 1993 Facility: Reynolds Metal Co. River Rd.
At (Time):1000 CERCLIS or EPA ID No:ALD000652693

Person(s) contacted:	Mike Doyle
Title/Position:	Superintendent
Phone:	205-760-6452
Organization:	Florence Water Department
Address (City/State):	Florence, Alabama

GENERAL SUBJECT

Water intakes and distribution for the Florence Water Department

CONVERSATION SUMMARY

Mr. Doyle told Mitch Cohen that the Florence Water Department uses two intakes to supply its system. One intake is located at Wilson Lake across from the Muscle Shoals intake and the second intake is located on Cypress Creek. Mr. Doyle added that the Florence system serves a total of 18250 connections which includes three other systems, East Lauderdale, West Lauderdale and Chisolm Heights.

REFERENCE NO. 21

TELEPHONE CONTACT SUMMARY
DYNAMAC CORPORATION

Call made by:Mitch Cohen Signature/Date: Mitch Cohen 2/2/93
On (Date):Feb. 2, 1993 Facility: Reynolds Metal Co. River Rd.
At (Time):1620 CERCLIS or EPA ID No:ALD000652693

Person(s) contacted: Lewis Moore
Title/Position: Manager
Phone: 205-389-2000
Organization: Sheffield Public Utilities (Water Department)
Address (City/State): Sheffield, Alabama

GENERAL SUBJECT

Water intakes and distribution for the Sheffield Water Department

CONVERSATION SUMMARY

Mr. Moore told Mitch Cohen that the Sheffield Water Department uses one intake located approximately 2.0 miles west of Wilson Dam. Mr. Moore added that the Sheffield system serves 5000 connections. Mr. Moore also verified that area lakes are recreationally fished and used for boating.

REFERENCE NO. 22

TELEPHONE CONTACT SUMMARY

CALL MADE BY: Betty Ann Pruner, Dynamac Corporation REGION: IV

Betty Ann Pruner 1/29/92

DATE: 29 January 1992

TIME: 1000

PERSON CONTACTED:

NAME	Mr. Bolton
TITLE	Superintendent of the Water Department
PHONE NO.	(205) 389-2000
ORGANIZATION	Sheffield Water Department Sheffield, Alabama

The Sheffield Water Department has one intake on the Tennessee River. The daily average intake rate is 2.2 million gallons per day. The system serves 4500 connections. The system also sells water to West Colbert County, a rural system, which supplies potable water to approximately 1000 connections. He said there was recreational fishing in the Tennessee River.

REFERENCE NO. 23

TELEPHONE CONTACT SUMMARY
DYNAMAC CORPORATION

Call made by: Mitch Cohen
On (Date): April 2, 1993

At (Time):1445

Signature/Date: [illegible] 4/2/93
Facility: Reynolds Metal Co.
River Rd.
CERCLIS or EPA No:ALD000652693

Person(s) contacted: Louis Frederick
Title/Position: Manager
Phone: (205) 386-2601
Organization: Tennessee Valley Authority, Wilson Hydroelectric Plant
Address (City/State): Muscle Shoals, Alabama

GENERAL SUBJECT

Water intake and distribution for the TVA Water system.

CONVERSATION SUMMARY

Mr. Frederick told Mitch Cohen that the TVA Water System uses one intake located approximately 1500 feet downstream from the Muscle Shoals intake on Wilson Lake to supply its system. The TVA system supplies water to the 800 workers that are present at the National Fertilizer Development Center within the TVA reservation.

REFERENCE NO. 24

TELEPHONE CONTACT SUMMARY

CALL MADE BY: Betty Ann Pruner, Dynamac Corporation REGION: IV

Betty Ann Pruner 3/16/92

DATE: 16 March 1992

TIME: 1500

PERSON CONTACTED:

NAME	Lynn Fisk
TITLE	Environmental Engineer, Water Quality Branch
PHONE NO.:	(205) 271-7700
ORGANIZATION:	Alabama Department of Environmental Management, Montgomery, Alabama

The Tennessee River downstream of Sevenmile Island to the Tennessee Alabama state line is designated for use for swimming and other whole body water contact sports.

REFERENCE NO. 25

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REYNOLDS METAL
LATITUDE 37:47:37 LONGITUDE 87:36: 5 1980 POPULATION

KM	0.00-.400	.400-.810	.810-1.60	1.60-3.20	3.20-4.80	4.80-6.40	SECTOR TOTALS
S 1	0	0	0	1714	8098	4425	14237
S 2	0	0	0	0	2005	7	2012
S 3	0	0	0	555	0	0	555
S 4	0	0	0	0	0	0	0
S 5	0	0	0	0	0	520	520
S 6	0	0	0	2419	0	0	2419
RING TOTALS	0	0	0	4688	10103	4952	19743

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REFERENCE NO. 26

U.S. Department of Commerce, Proof Copy of table generated for CPH-1: Summary Population and Housing Characteristics, issued by Bureau of the Census (April 1991).

Table 6. Household, Family, and Group Quarters Characteristics: 1990

[For definitions of terms and meanings of symbols, see text]

State County Place and (In Selected States) County Subdivision	Persons in households	All households	Family households: Total	Family households: Married-couple family	Family households: Female householder, no husband present	Nonfamily households: Total	Nonfamily households: Householder living alone: Total	Nonfamily households: Householder living alone: 65 years and over: Total	Nonfamily households: Householder living alone: 65 years and over: Female	Persons per— Household	Persons per— Family	Persons in group quarters: Total	Persons in group quarters: Institutionalized persons	Persons in group quarters: Other persons in group quarters
The State	3 948 185	1 506 790	1 103 836	864 327	201 220	402 954	358 078	154 191	123 608	2.62	3.13	92 402	51 583	40 819
COUNTY														
Autauga County	34 028	11 828	9 501	7 706	1 437	2 325	2 093	933	746	2.88	3.27	194	173	21
Baldwin County	97 144	37 044	28 142	23 512	3 718	8 902	7 923	3 717	2 874	2.62	3.06	1 136	759	377
Barbour County	24 844	9 218	6 687	4 869	1 518	2 531	2 340	1 218	981	2.70	3.28	573	539	34
Bibb County	16 333	5 745	4 478	3 628	650	1 267	1 164	628	518	2.84	3.29	243	225	18
Blount County	39 047	14 644	11 854	10 139	1 180	2 990	2 788	1 500	1 242	2.67	3.05	201	182	19
Bullock County	10 369	3 787	2 712	1 590	979	1 075	1 021	592	458	2.74	3.35	673	673	-
Butler County	21 687	7 935	5 825	4 261	1 269	2 110	1 987	1 174	925	2.73	3.29	205	205	-
Calhoun County	111 127	42 983	31 718	25 111	5 348	11 265	9 965	4 215	3 477	2.59	3.08	4 907	954	3 953
Chambers County	36 502	13 786	10 219	7 564	2 169	3 567	3 289	1 794	1 429	2.65	3.15	374	363	11
Cherokee County	19 466	7 466	5 860	4 984	666	1 606	1 523	828	653	2.61	3.01	77	76	1
Chilton County	32 228	12 114	9 352	7 773	1 218	2 762	2 552	1 358	1 073	2.66	3.09	230	212	18
Choctaw County	15 941	5 747	4 313	3 291	831	1 434	1 370	705	528	2.77	3.32	77	77	-
Clarke County	26 935	9 506	7 192	5 498	1 404	2 314	2 184	1 136	888	2.83	3.37	305	303	2
Clay County	13 084	5 003	3 794	3 169	495	1 209	1 153	646	525	2.62	3.09	168	168	-
Cleburne County	12 662	4 776	3 748	3 212	366	1 028	955	499	406	2.65	3.05	68	67	1
Coffee County	39 784	15 260	11 570	9 546	1 639	3 690	3 315	1 525	1 236	2.61	3.05	452	384	68
Colbert County	51 379	20 096	15 174	12 410	2 278	4 922	4 592	2 291	1 873	2.56	3.01	287	239	48
Conecuh County	13 948	5 259	3 808	2 928	808	1 361	1 302	750	598	2.65	3.18	106	92	14
Coosa County	10 907	4 017	3 095	2 469	478	922	855	419	306	2.72	3.17	156	156	-
Covington County	36 141	14 444	10 474	8 440	1 629	3 970	3 707	2 078	1 684	2.50	3.01	337	284	53
Crenshaw County	13 495	5 282	3 786	2 870	747	1 478	1 407	831	640	2.58	3.12	140	140	-
Cullman County	66 715	25 805	19 815	17 166	2 093	5 990	5 284	2 729	2 237	2.61	3.02	898	717	181
Dale County	47 225	17 574	13 334	10 818	2 052	4 240	3 709	1 428	1 127	2.69	3.15	2 408	306	2 102
Dallas County	47 196	17 033	12 402	7 770	4 038	4 631	4 322	2 163	1 893	2.77	3.38	934	566	368
DeKalb County	54 175	20 968	16 094	13 593	1 921	4 874	4 571	2 420	1 995	2.58	3.02	476	476	-
Elmore County	45 636	16 532	13 000	10 628	1 859	3 532	3 212	1 515	1 194	2.77	3.19	3 374	3 363	11
Escambia County	34 154	12 899	9 507	7 258	1 841	3 392	3 128	1 586	1 283	2.65	3.16	1 364	1 364	-
Etowah County	98 568	38 875	28 585	22 958	4 573	10 090	9 411	4 763	3 953	2.55	3.04	1 272	980	292
Fayette County	17 785	6 859	5 165	4 306	865	1 694	1 583	932	754	2.59	3.06	177	126	51
Franklin County	27 504	10 850	8 164	6 930	975	2 686	2 528	1 306	1 119	2.53	3.00	310	306	4
Geneva County	23 523	9 231	6 870	5 698	911	2 361	2 234	1 213	1 008	2.55	3.03	124	124	-
Greene County	10 083	3 512	2 532	1 475	894	980	917	488	353	2.87	3.50	70	70	-
Hale County	15 232	5 397	3 983	2 679	1 094	1 414	1 319	744	538	2.82	3.40	266	264	2
Henry County	15 260	5 769	4 320	3 336	779	1 449	1 345	767	609	2.65	3.13	114	103	11
Houston County	80 450	30 844	22 628	17 692	4 097	8 216	7 429	3 222	2 616	2.61	3.12	881	738	143
Jackson County	47 460	18 020	14 041	11 649	1 676	3 979	3 726	1 833	1 496	2.63	3.05	336	170	166
Jefferson County	636 362	251 479	176 573	129 641	39 530	74 906	66 633	26 851	21 781	2.54	3.10	13 143	8 463	4 680
Lamar County	15 536	6 005	4 512	3 777	571	1 493	1 418	814	653	2.59	3.07	179	162	17
Lauderdale County	78 134	30 905	22 968	19 144	3 113	7 939	7 225	3 414	2 807	2.53	3.00	1 527	633	894
Lawrence County	31 348	11 410	8 032	7 514	1 189	2 378	2 225	1 146	871	2.75	3.16	167	167	-
Lee County	82 724	33 097	20 115	15 336	3 675	12 982	8 635	2 001	1 539	2.50	3.11	4 422	703	3 719
Limestone County	52 404	19 685	15 277	12 794	1 935	4 408	4 077	1 791	1 456	2.66	3.09	1 731	1 589	142
Lowndes County	12 630	4 056	3 143	1 992	1 065	913	850	460	344	3.11	3.65	28	28	-
Macon County	22 811	8 483	5 535	3 119	2 056	2 948	2 482	1 137	855	2.67	3.38	2 317	563	1 754
Madison County	233 149	91 208	65 475	53 195	9 599	25 733	21 923	5 866	4 758	2.56	3.06	5 763	1 408	4 355
Marengo County	22 889	8 156	6 086	4 326	1 455	2 068	1 973	1 067	834	2.81	3.37	195	189	6
Marion County	29 219	11 521	8 700	7 391	1 013	2 821	2 650	1 432	1 174	2.54	2.99	611	570	41
Marshall County	70 119	27 781	20 927	17 403	2 790	6 834	6 332	3 136	2 594	2.53	2.97	713	574	139
Mobile County	371 562	136 899	100 814	73 628	22 877	36 085	31 851	12 548	9 841	2.71	3.23	7 081	3 951	3 130
Monroe County	23 801	8 412	6 355	4 845	1 261	2 057	1 915	972	756	2.83	3.35	167	160	7
Montgomery County	201 578	77 173	53 573	37 973	13 254	23 600	20 578	7 609	6 186	2.61	3.21	7 507	4 276	3 231
Morgan County	96 295	37 799	28 651	23 679	3 893	9 148	8 370	3 364	2 706	2.60	3.05	1 748	1 600	148
Perry County	12 145	4 201	3 102	1 994	945	1 099	1 049	605	468	2.89	3.50	614	138	476
Pickens County	20 456	7 568	5 858	4 179	1 236	1 910	1 822	1 038	787	2.70	3.21	243	222	21
Pike County	25 824	10 314	6 949	5 052	1 606	3 365	2 892	1 432	1 163	2.50	3.11	1 771	214	1 557
Randolph County	19 671	7 553	5 640	4 532	874	1 913	1 814	1 006	800	2.60	3.09	210	204	6
Russell County	46 286	17 499	12 736	9 045	3 053	4 763	4 286	1 825	1 392	2.65	3.17	574	406	168
St. Clair County	48 453	17 666	14 094	12 032	1 597	3 572	3 285	1 486	1 194	2.74	3.13	1 556	1 530	26
Shelby County	97 539	35 985	27 767	24 095	2 862	8 218	7 034	1 866	1 483	2.71	3.14	1 819	582	1 237
Sumter County	15 434	5 543	3 914	2 417	1 286	1 631	1 475	778	590	2.78	3.42	740	142	598
Talladega County	71 726	26 448	20 195	15 589	3 752	6 253	5 782	2 810	2 252	2.71	3.18	2 379	1 854	525
Tallapoosa County	38 237	14 700	10 992	8 507	2 046	3 708	3 445	1 827	1 454	2.60	3.08	589	575	14
Tuscaloosa County	141 179	55 354	37 355	28 653	7 194	17 999	14 272	4 795	3 813	2.58	3.13	9 343	3 574	5 769
Walker County	66 859	25 554	19 534	16 072	2 723	6 020	5 608	2 957	2 402	2.62	3.06	811	651	160
Washington County	16 604	5 709	4 548	3 648	725	1 161	1 096	566	431	2.91	3.35	90	90	-
Wilcox County	13 353	4 415	3 289	2 080	1 033	1 126	1 055	588	463	3.02	3.64	213	210	3
Winston County	21 815	8 544	6 504	5 658	705	1 950	1 836	937	748	2.55	2.97	238	211	27
PLACE AND COUNTY SUBDIVISION														
Abbeville city, Henry County	3 081	1 214	852	609	199	362	341	206	177	2.54	3.13	92	90	2
Adamsville city, Jefferson County	4 142	1 484	1 219	1 013	155	265	245	123	101	2.79	3.13	19	-	19
Addison town, Winston County	828	263	194	152	36	69	61	30	27	2.38	2.80	-	-	-
Akron town, Hale County	468	182	120	83	51	62	60	42	30	2.57	3.31	-	-	-
Alabaster city, Shelby County	14 455	4 921	4 154	3 558	486	787	665	214	185	2.94	3.23	277	244	33
Albertville city, Marshall County	14 356	5 838	4 248	3 430	681	1 590	1 486	751	648	2.46	2.95	151	142	9
Alexander City city, Tallapoosa County	14 630	5 745	4 152	3 093	913	1 593	1 488	824	683	2.55	3.08	287	287	-
Aliceville city, Pickens County	2 933	1 200	763	468	246	437	423	283	233	2.44	3.20	76	76	-
Allgood town, Blount County	464	163	138	110	20	25	22	14	13	2.85	3.09	-	-	-
Altoona town	910	360	264	202	48	116	114	64	50	2.39	2.98	50	50	-
Blount County	3	1	1	1	-	-	-	-	-	3.00	3.00	-	-	-
Etowah County	907	379	263	201	48	116	114	64	50	2.39	2.98	50	50	-
Andalusia city, Covington County	9 120	3 812	2 558	1 902	551	1 256	1 167	803	513	2.38	3.00	149	109	40
Anderson town, Lauderdale County	339	144	105	89	15	39	38	22	17	2.35	2.84	-	-	-
Anniston city, Calhoun County	26 160	10 877	7 250	4 916	2 009	3 537	3 298	1 589	1 312	2.42	3.03	463	404	59
Arab city	6 256	2 592	1 909	1 575	275	683	645	320	281	2.41	2.88	65	65	-
Cullman County	22	10	9	7	1	1	1	1	1	2.20	2.33	-	-	-
Marshall County	6 234	2 582	1 900	1 568	274	682	644	319	280	2.41	2.89	65	65	-
Ardmore town, Limestone County	1 080	439	315	236	64	124	118	64	60	2.46	3.02	-	-	-
Argo town	930	332	270	242	23	62	58	27	17	2.80	3.15	-	-	-
Jefferson County	59	21	13	15	-	6	6	4	2	2.81	3.53	-	-	-
St. Clair County	871	311	255	227	23	56	50	23	15	2.80	3.13	-	-	-
Arlton town, Dale County	743	285	200	151	42	85	84	47	41	2.61	3.24	-	-	-
Arley town, Winston County	336	123	102	84	14	21	19	13	9	2.75	3.07	-	-	-

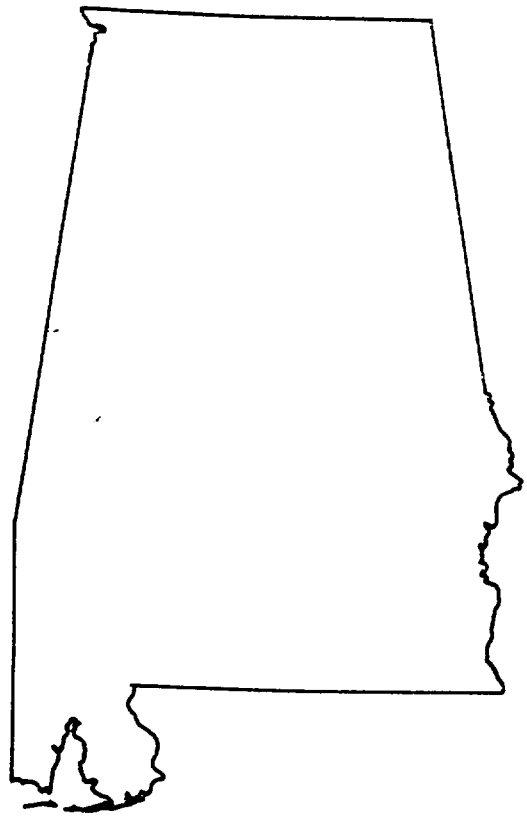
TPSII (POSTSCRIPT) CPH101 CENSUS90 72560609 04/23/91 12:02 PM MACHINE: C DATA:CENSUS90'PH1TPSDAT01. 04/23/91 11:52:37 OUTPUT:ONSITE-P1047 PAGE: 65
TSF:CENSUS90'92. 04/23/91 11:52:52 UTF:CENSUS90'93. 04/23/91 11:52:53 META:CENSUS90'PH1TABLES01. 04/23/91 11:50:36

NOTE: The population counts set forth herein are subject to possible correction for undercount or overcount. The United States Department of Commerce is considering whether to correct these counts and will publish corrected counts, if any, not later than July 15, 1991.

REFERENCE NO. 27

Water Resources Data Alabama

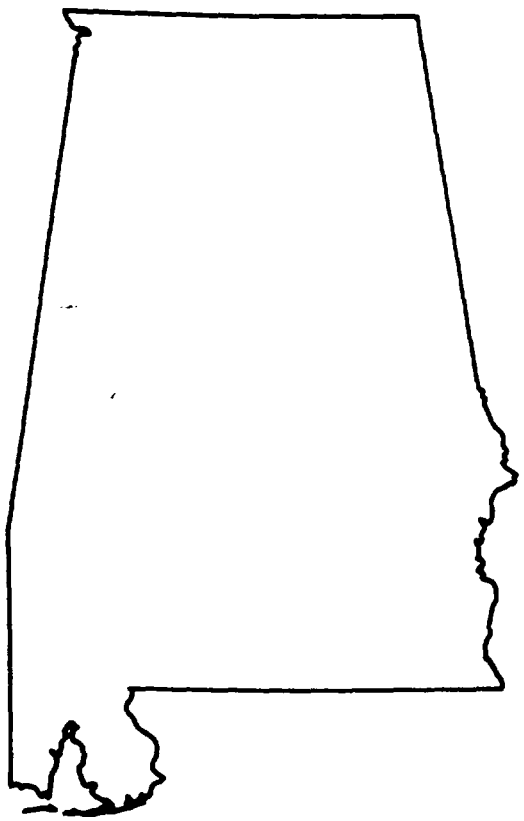
Water Year 1990



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT AL-90-1
Prepared in cooperation with the Alabama Department of Environmental Management, the Alabama Highway Department, and with other State, municipal, and Federal agencies

Water Resources Data
Alabama
Water Year 1990

by J.L. Pearman, F.C. Sedberry, V.E. Stricklin, and P.W. Cole



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT AL-90-1
Prepared in cooperation with the Alabama Department of Environmental Management, the Alabama Highway Department, and with other State, municipal, and Federal agencies

U.S. DEPARTMENT OF THE INTERIOR

MANUEL LUJAN, JR., Secretary

U.S. GEOLOGICAL SURVEY

Dallas Peck, Director

For information on the water program in Alabama write to
District Chief, Water Resources Division
U.S. Geological Survey
520 19th Avenue
Tuscaloosa, Alabama 35401

1991

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[Letter after station name designates type of data: (d) discharge, (c) chemical, (t) water temperature, (s) sediment, (g) gage height, (e) elevation]

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TENNESSEE RIVER MAIN STEM

03589500 TENNESSEE RIVER AT FLORENCE, AL

LOCATION.--Lat 34°47'13", long 87°40'12", in SW¼ sec. 14, T. 3 S., R. 11 W., Lauderdale County, Hydrologic Unit 06030005, on right bank at lower end of Patton Island, 137 ft upstream from Southern Railway bridge, 700 ft upstream from O'Neal Bridge on U.S. Highway 72, 1.1 mi south of Florence Post Office, 1.7 mi upstream from Cypress Creek, 2.7 mi downstream from Wilson Dam, and at mile 256.7.

DRAINAGE AREA.--30,810 mi², approximately.

PERIOD OF RECORD.--November 1871 to September 1894 (gage heights only), October 1894 to current year.

REVISED RECORD.--WSP 473: 1897(M). WSP 1306: 1914(M), 1936 (monthly runoff). WSP 1436: 1897, 1899, 1916.

GAGE.--Water-stage recorder. Datum of gage is 401.12 ft above National Geodetic Vertical Datum of 1929. Prior to Apr. 1, 1926, several National Weather Service staff gages at or near Southern Railway bridge 137 ft downstream at same datum. Apr. 1, 1926, to Mar. 11, 1958, water-stage recorder on left bank at lower end of old lock and dam, 1,400 ft upstream at same datum. Since Oct. 1, 1938, auxiliary water-stage recorder 15.2 mi downstream.

REMARKS.--Estimated daily discharges: Oct. 1-25. Records fair except those below 25,000 ft³/s, which are poor. Slight regulation since 1924 by Wilson Lake and increasing regulation since 1936 as other reservoirs have been built above station. Flow now almost completely regulated.

AVERAGE DISCHARGE.--96 years, 51,680 ft³/s, 22.78 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 530,000 ft³/s, Mar. 17, 1973, maximum gage height, 32.5 ft, Mar. 19, 1897; minimum daily discharge, 105 ft³/s, Sept. 7, 1969 (computed on basis of Wilson Dam records), minimum gage height, -0.30 ft, Oct. 8, 1925, caused by filling of Wilson Lake.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1867 reached a stage of 31.1 ft, from National Weather Service records, discharge, 421,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 318,000 ft³/s, Oct. 2, maximum gage height, 21.91 ft, Oct. 2; minimum daily discharge, 15,300 ft³/s, Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e233000	56900	94300	62700	150000	119000	32300	32600	53300	21400	39100	18100
2	e284000	56300	72300	87400	151000	122000	44700	43600	35500	21400	36100	28300
3	e227000	50600	71000	91200	164000	121000	49100	50600	40400	17600	36600	31700
4	e219000	56500	85400	103000	201000	124000	43500	50100	56000	18800	33600	39700
5	e199000	48300	75200	103000	189000	122000	30900	47000	51900	20300	29400	40300
6	e160000	53500	66300	111000	183000	133000	44300	50600	52300	20300	41600	44700
7	e117000	52400	76500	125000	179000	130000	20800	49600	50900	19900	37700	44700
8	e108000	59100	83600	135000	178000	129000	17000	49100	51600	19700	40800	26500
9	e108000	68500	80200	143000	178000	121000	33300	48100	34200	39900	44000	25400
10	e74700	69000	76400	142000	199000	124000	34600	59600	30700	31500	40800	32700
11	e84700	68700	74800	139000	186000	120000	34900	75500	40000	28100	33500	34600
12	e81000	72500	70400	135000	178000	98700	32700	67400	38200	29100	27900	29300
13	e82300	62200	78900	114000	176000	83400	28400	55000	38700	40500	42900	25600
14	e65700	60800	74300	111000	174000	90500	17900	46600	39000	51300	38900	27500
15	e75800	61300	75400	97200	175000	116000	17000	57900	36800	17300	44600	29100
16	e73800	87500	80300	92600	214000	151000	19400	53200	43400	36000	41900	20400
17	e78400	101000	72000	89700	254000	193000	17800	48000	32400	35800	48500	26900
18	e72000	101000	70500	96100	269000	174000	23200	31200	31700	42300	31200	29400
19	e69300	100000	68100	90500	268000	164000	23200	51900	31700	43600	32000	29600
20	e69000	101000	68500	93500	257000	170000	18200	39500	34700	40300	46600	35100
21	e63800	100000	78100	105000	243000	165000	35600	63900	30700	27500	43200	27900
22	e60700	100000	77500	114000	224000	166000	64600	74800	28100	31200	45300	21200
23	e63600	101000	79200	126000	197000	131000	47400	63500	29600	37200	38900	21400
24	e58900	100000	75900	140000	172000	97500	37700	48500	26300	38400	35100	25600
25	e63000	99700	72500	148000	161000	82500	38300	51100	26900	41500	40900	25700
26	58500	99700	54300	128000	154000	93000	36700	45700	20300	42700	39500	23000
27	55500	100000	40600	117000	135000	86200	28500	29400	34500	42300	51000	25500
28	54500	100000	35900	107000	124000	66700	28000	40500	34600	37500	45200	26100
29	53200	101000	38200	111000	---	64700	23200	49000	31400	22200	45000	17100
30	57400	95400	30800	138000	---	71500	32200	51500	29000	41000	21000	15300
31	55000	---	46900	153000	---	58800	---	51100	---	40500	31000	---
TOTAL	3125800	2383900	2144300	3548900	5333000	3688500	955400	1576100	1114800	997100	1203800	848400
MEAN	100800	79460	69170	114500	190500	119000	31850	50840	37160	32160	38830	28280
MAX	284000	101000	94300	153000	269000	193000	64600	75500	56000	51300	51000	44700
MIN	53200	48300	30800	62700	124000	58800	17000	29400	20300	17300	21000	15300
CFSM	3.27	2.58	2.25	3.72	6.18	3.86	1.03	1.65	1.21	1.04	1.26	.92
IN.	3.77	2.88	2.59	4.28	6.44	4.45	1.15	1.90	1.35	1.20	1.45	1.02

CAL YR 1989 TOTAL 27421600 MEAN 75130 MAX 284000 MIN 10000 CFSM 2.44 IN. 33.11
WTR YR 1990 TOTAL 26920000 MEAN 73750 MAX 284000 MIN 15300 CFSM 2.39 IN. 32.50

e Estimated

REFERENCE NO. 28

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

COLBERT COUNTY, ALABAMA
(UNINCORPORATED AREAS)

PANEL 125 OF 500
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
010318 0125 B

EFFECTIVE DATE:
JUNE 15, 1981

federal emergency management agency
federal insurance administration

KEY TO MAP

·-Year Flood Boundary	ZONE B
ı-Year Flood Boundary	
ıe Designations* With e of Identification -, 12/2/74	
ı-Year Flood Boundary	ZONE B
·-Year Flood Boundary	
e Flood Elevation Line .n Elevation In Feet**	513
e Flood Elevation in Feet ere Uniform Within Zone**	(EL 987)
vation Reference Mark	RM7 ×
er Mile	• M1.5

Referenced to the National Geodetic Vertical Datum of 1929

*EXPLANATION OF ZONE DESIGNATIONS

ONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
AO	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
.99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

NOTES TO USER

tain areas not in the special flood hazard areas (zones A and V) be protected by flood control structures.

; map is for flood insurance purposes only; it does not neces- y show all areas subject to flooding in the community or ılanimetric features outside special flood hazard areas.

adjoining map panels, see separately printed Index To Map els.

INITIAL IDENTIFICATION:
FEBRUARY 24, 1978

FLOOD HAZARD BOUNDARY MAP REVISIONS:

determined.

NOTES TO USER

tain areas not in the special flood hazard areas (zones A and V) be protected by flood control structures.

; map is for flood insurance purposes only; it does not neces- y show all areas subject to flooding in the community or ılanimetric features outside special flood hazard areas.

adjoining map panels, see separately printed Index To Map els.

INITIAL IDENTIFICATION:
FEBRUARY 24, 1978

FLOOD HAZARD BOUNDARY MAP REVISIONS:

FLOOD INSURANCE RATE MAP EFFECTIVE:
JUNE 15, 1981

FLOOD INSURANCE RATE MAP REVISIONS:

fer to the FLOOD INSURANCE RATE MAP EFFECTIVE date wn on this map to determine when actuarial rates apply to ıctures in the zones where elevations or depths have been estab- ed.

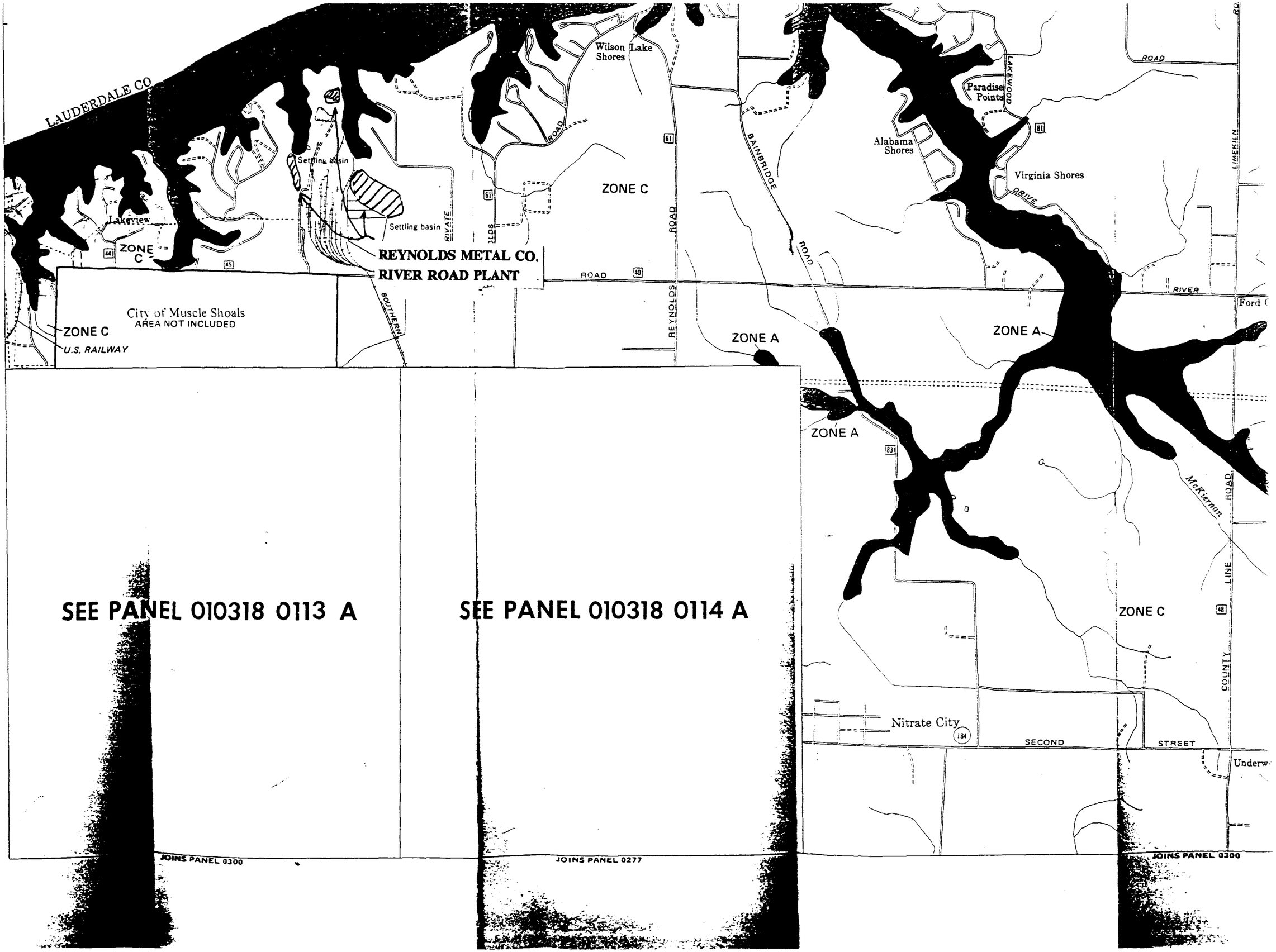
determine if flood insurance is available in this community, ıtact your insurance agent, or call the National Flood Insurance ıgram, at (800) 638-6620, or (800) 424-8872.

APPROXIMATE SCALE

2000 0 2000 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM


LAUDERDALE CO
Wilson Lake Shores
Paradise Points
Alabama Shores
Virginia Shores
LAKEWOOD
DRIVE
ROAD
LIMEKILN
Settling basin
Settling basin
Lakeview
ZONE C
ZONE C
REYNOLDS METAL CO.
RIVER ROAD PLANT
RIVATE
SOUTHERN
ROAD
REYNOLDS
BAINBRIDGE
ROAD
RIVER
Ford C
City of Muscle Shoals
AREA NOT INCLUDED
ZONE C
U.S. RAILWAY
ZONE A
ZONE A
ZONE A
McKiernan
ROAD
LINE
COUNTY
ZONE C
Nitrate City
SECOND
STREET
Underw
SEE PANEL 010318 0113 A
SEE PANEL 010318 0114 A
JOINS PANEL 0300
JOINS PANEL 0277
JOINS PANEL 0300

REFERENCE NO. 29

Soil Survey

Series 1933, No. 22. Issued February 1939

Colbert County Alabama

By
L. G. BRACKEEN, in Charge
Alabama Department of Agriculture and Industries
and
A. L. GRAY
Bureau of Chemistry and Soils

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF CHEMISTRY AND SOILS
In cooperation with the
Alabama Department of Agriculture and Industries

For sale by the SUPERINTENDENT OF DOCUMENTS, WASHINGTON, D. C. Price 35 cents

SOIL SURVEY OF COLBERT COUNTY, ALABAMA

By L. G. BRACKEEN, Alabama Department of Agriculture and Industries, in Charge, and A. L. GRAY, Bureau of Chemistry and Soils

COUNTY SURVEYED

Colbert County lies in the northwestern part of Alabama, in the Muscle Shoals district, about 95 miles northwest of Birmingham (fig. 1). It lies south of Wilson Lake and Tennessee River, and the Mississippi-Alabama State line forms the western boundary. The county is irregular in shape, being narrow in the middle and wide at each end, extending in an east-west direction about 40 miles, and being 10 miles wide in the middle and approximately 20 miles wide at each end. It has a total area of 606 square miles, or 387,840 acres.

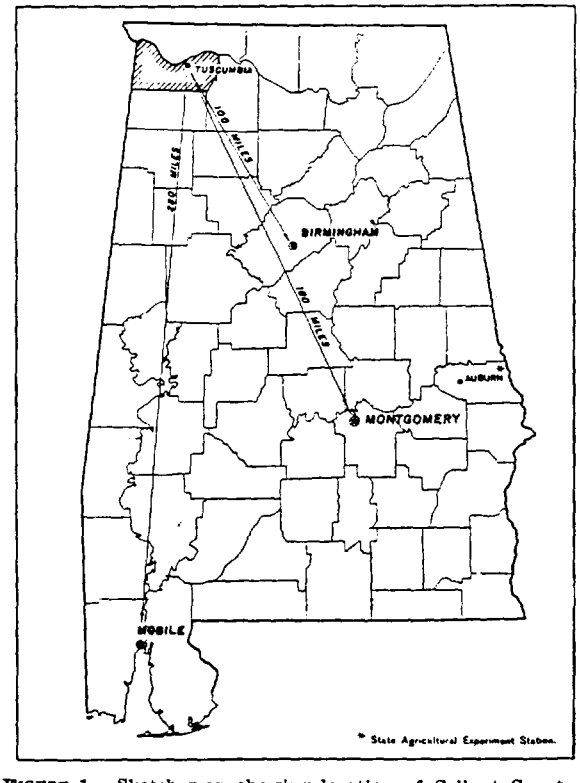


FIGURE 1.—Sketch map showing location of Colbert County, Ala.

Physiographically Colbert County comprises two well-defined divisions, the limestone valley and the mountains. The limestone valley comprises about 42 percent of the county and lies adjacent to Tennessee River and its tributaries. This valley is a lowland belt, rather than a river valley, and owes its existence to a series of limestone beds which constitute one of the series of rocks underlying the Appalachian Mountain system. The line separating the valley from the mountains begins in the southeastern corner of the county near Old Bethel Community and extends northward around the base of LaGrange Mountain, thence westward by Spring Valley to a point 2 miles south of Tuscumbia, Barton, and Cherokee, and then northward by way of Lane Springs to Tennessee River.

mendations for corn, alfalfa, pasture grass mixtures, and other crops may be obtained at this substation.

Dewey loam.—Dewey loam, locally known as "red lands", is the largest and agriculturally the most important soil, and it probably produces more than 50 percent of all the cotton. It has been used almost exclusively for the growing of cotton since the advent of the white man in this section.

The surface soil of Dewey loam, to a depth of 4 or 6 inches, is a brown or reddish-brown mellow and friable loam which contains a large quantity of silt, some fine sand, and clay. This is underlain by a 1- to 3-inch subsurface layer of reddish-brown clay loam. The subsoil is a reddish-brown silty clay loam or clay which extends to a depth ranging from 3 to 12 feet. This material is uniform in color, is fairly heavy but friable, has a massive structure, and breaks down into irregular-shaped lumps which are fairly easily crushed under normal moisture conditions. It is sticky when wet but hard and brittle when dry. It is underlain by a reddish-brown, mottled with yellow, and in a few places with gray, heavy sticky to tough clay, containing many partly weathered chert fragments. A few very small soft iron or manganese concretions are present in the subsoil.

The more rolling areas of Dewey loam have suffered from sheet erosion under clean cultivation, and in many places all of the original surface soil has been removed, exposing the red clay loam subsoil. Most of the surface material has been deposited in the sinks and depressions to form Abernethy silt loam. The subsoil is thinner in these areas, owing probably to the fact that it never was so thick as on the areas having smoother relief. On some of the flatter areas the surface soil contains a relatively high proportion of silt or fine sand. In the northeastern corner of the county near Brick, the surface soil is lighter in color and more subject to erosion than the larger areas of this soil. Where Dewey loam joins the Colbert soils, the color and consistence of both the surface soil and subsoil grade toward the characteristics of the Colbert soils. A few angular chert fragments occur on the surface throughout all areas of this soil. Included with Dewey loam as mapped, are small areas of Abernethy silt loam, Decatur clay loam, and Dewey cherty loam, which were too small to map separately.

Dewey loam occupies large continuous areas, broken mainly by areas of Decatur clay loam, other soils of the Dewey series, and by many small areas of Abernethy silt loam. It occurs in close geographic association with Decatur clay loam. The largest areas of Dewey loam are developed west, north, and east of Cherokee, south of Tuscumbia, in the vicinity of Sheffield, south of Muscle Shoals, and around Mount Pleasant. The relief ranges from undulating and gently rolling to rolling, with here and there some long gentle slopes. Natural surface drainage and the internal drainage of all areas of this soil are good. Part of the surface water runs into small drainageways, but the drainage of a large part of this soil is through subterranean channels. The excess surface water runs onto areas of Abernethy silt loam and into the small sinks, or depressions, and fianlly reaches the underground passages.

City or Village, Roads, Buildings, Wharves, Jetties, Breakwater, Levee, Lighthouse, Fort

Secondary roads and Trails

DOUBLE TRACK
SINGLE TRACK
JUXTAPOSITION
IN ROAD

Railroads Steam and Electric

Bridges, Ferry

R.R. ABOVE
R.R. BELOW

R.R. crossings, Tunnel

Ford, Dam, Sawmill, Windmill

STATE
COUNTY
CIVIL TOWNSHIP

Boundary lines

School, Church, Creamery, Cemeteries

RESERVATION
LAND GRANT
CITY OR VILLAGE

Boundary lines

Triangulation station
Boundary monument
Oil or Gas wells

U.S. Township and Section lines
Recovered corners

Forest fire station
Airway beacon
Oil or Gas tanks

Transmission line
Oil or Gas pipe line

Mine or Quarry
Rock outcrop
Made land

Soil boundaries, Stony, Gravelly and Cherty areas

Depression contours

Prominent hills
Mountain peaks

Sand, Wash, and Sand dunes

Bluff, Escarpment, Mine dumps

DRAINAGE
(Printed in blue)

Streams, Springs, Wells, Flowing wells

Lakes, Ponds, Intermittent lakes

Unsurveyed and Intermittent streams

Water pipe lines, Canals, Ditches, Flumes

Swamp
Salt marshes

Submerged marsh
Tidal flats

The above signs are in current use on the soil maps. Variations from this usage appear in some maps of earlier dates.

Atwood very fine sandy loam — Av

Flat phase — Cf

Valley phase — Av

Colbert clay — Cc

Dickson silt loam

Etowah silt loam

Kalmia fine sandy loam — Kf

Melvin silt loam

Atwood gravelly loam

Decatur clay loam — D

Guin soils (*Undifferentiated*) — G

Ochlockonee fine sandy loam — Of

Cahaba gravelly fine sandy loam

Cahaba fine sandy loam — Ca

Dewey cherty loam — Dh

Rolling phase — Dh

Guthrie silt loam — Gu

Ochlockonee silt loam — Os

Hartsells very fine sandy loam — Hs

Savannah very fine sandy loam — Sv

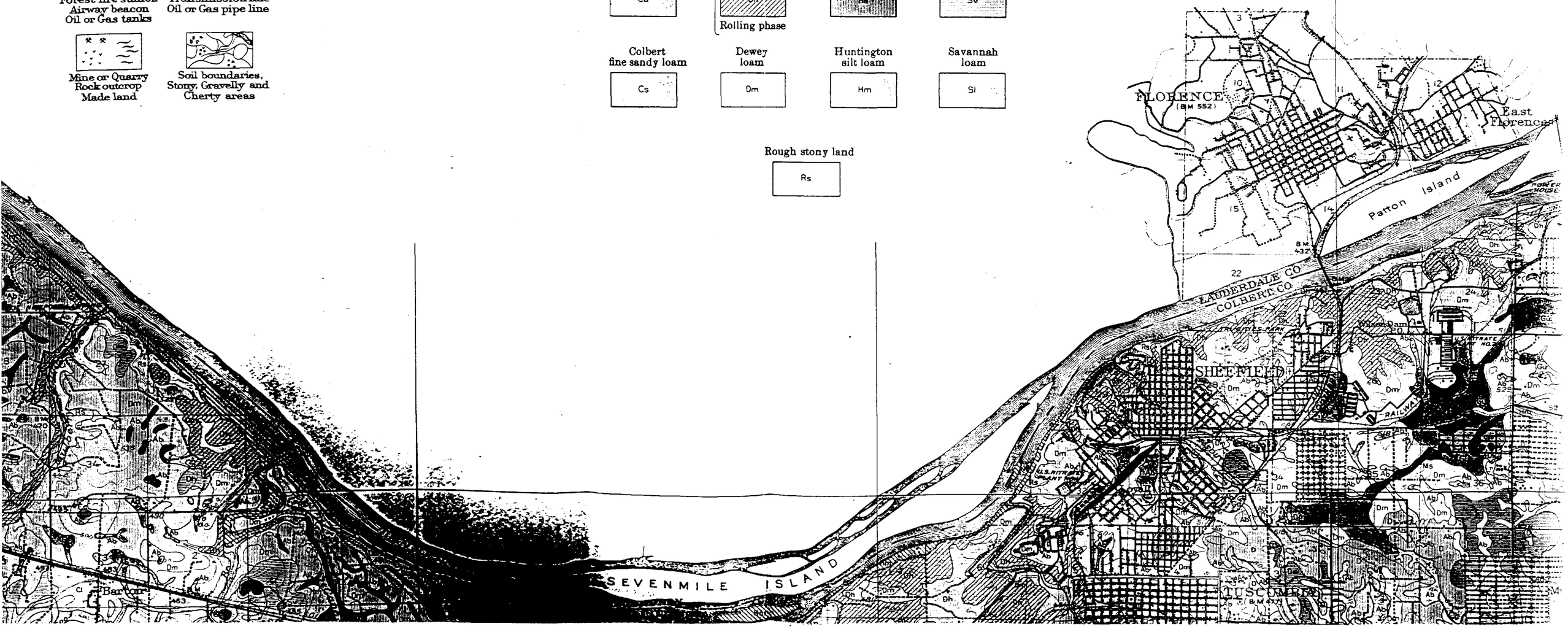
Colbert fine sandy loam — Cs

Dewey loam — Dm

Huntington silt loam — Hm

Savannah loam — Sl

Rough stony land — Rs



REFERENCE NO. 30

TELEPHONE CONTACT SUMMARY
DYNAMAC CORPORATION

Deborah Kristiansen

Call made by: Deborah Kristiansen
Date: September 8, 1993 September 8, 1993
Time: 9:25

EPA ID NO.: ALD000652693
Facilty: Reynolds Metals Company River Road Plant

Person contacted:	Name	Pat Anderson
	Title	Hydrogeologist
	Organization	EPA, RCRA Permitting Section
	City/State	Atlanta, Georgia
	Phone No.	(404) 347-3433

General Subject: Current RCRA status of Reynolds Metals Company River Road Plant

Conversation Summary:

Pat Anderson said that the Reynolds Metals Company River Road Plant, EPA ID NO. ALD000652693 (listed with RCRA as Southern Reclamation at geographical coordinates 34° 47' 30" latitude and 87° 36'00" longitude) is not currently listed as a generator.

REFERENCE NO. 31

The Utilities Board

City of Muscle Shoals

Phone (205) 386-9260 | P.O. Box 2648, 2120 East Second Street, MUSCLE SHOALS, ALABAMA 35662 | Fax (205) 386-9261

February 11,1993

Dynamac Corp.
230 Peachtree St. N. W.
Suite 500
Atlanta, Ga 30303

Dear Mr. Cohen:

You noted that you were trying to identify areas where residents are still on wells. Many residents may have public water available but have yet to connect to it. I have color shaded the different systems and as you can see, the Colbert System covers the east part of the county with approximately 1,200 customers. I'm not sure if you can use this map for a conclusive estimate of the number of people still on wells. You can contact Rita Head with the Colbert County System at 205-386-8504 if you need more assistance.

Yours truly,

Rodger Burcham

Rodger Burcham, Manager

THE UTILITIES BOARD
City of Muscle Shoals

Encl:

OVERSIZED

DOCUMENT

TELEPHONE CONTACT SUMMARY
DYNAMAC CORPORATION

Call made by: David C. Smith
On (Date): July 9, 1993
At (Time): 12:30

Signature/Date: 7/9/93
Facility: Monarch Tile
CERCLIS or EPA ID No: ALD067102301

Person(s) contacted: Mr. Bolton
Title/Position: Superintendent of the Water Department
Phone: (205) 389-2000
Organization: Sheffield Water Department
Address (City/State): Sheffield, Alabama

GENERAL SUBJECT

Water intakes and number of connections.

CONVERSATION SUMMARY

Mr. Bolton confirmed the following information to be correct:

- Sheffield Water Department operates one surface water intake on the Tennessee River.
- The system serves approximately 4,500 connections.
- Sheffield Water Department also sells water to West Colbert County. West Colbert County serves approximately 1,000 total connections.

Mr. Bolton said that West Colbert County receives approximately 40% of its water from the City of Cherokee. Cherokee has one surface water intake which is located approximately two miles downstream of the Colbert Steam Plant on Pickwick Lake. The remaining 60% of the water supply for West Colbert County is supplied by the Sheffield Water Department.

TELEPHONE CONTACT SUMMARY
DYNAMAC CORPORATION

Call made by: David C. Smith
On (Date): July 15, 1993
At (Time): 14:10

Signature/Date: 7/15/93
Facility: Monarch Tile
CERCLIS or EPA ID No: ALD067102301

Person(s) contacted: Anita Watkins
Title/Position: Meter Reader/Billing and Collection Agent
Phone: (205) 718-0301
Organization: Chisolm Heights Water System

GENERAL SUBJECT

Number of Connections

CONVERSATION SUMMARY

Ms. Watkins said that the Chisolm Heights system serves approximately 720 active meters with the water derived from the Florence Water Department. Ms. Watkins verified that her company has no other source of water other than the water purchased from the Florence system.

TELEPHONE CONTACT SUMMARY
DYNAMAC CORPORATION

Call made by: Betty Ann Pruner
On (Date): July 29, 1993
At (Time): 1030

Signature/Date: Betty Ann Pruner 8/2/93
Facility: Monarch Tile
CERCLIS No: ALD067102301

Person(s) contacted: Kenneth Murphy
Title/Position: Manager/Supervisor
Phone: (205) 766-8787
Organization: West Lauderdale Water Department
Address (City/State): West Lauderdale, Alabama

GENERAL SUBJECT

Number of Connections

CONVERSATION SUMMARY

Kenneth Murphy stated that the West Lauderdale Water System served 2,509 connections. Kenneth Murphy verified that the West Lauderdale Water System has no other source of water than the water purchased from the Florence system.

TELEPHONE CONTACT SUMMARY
DYNAMAC CORPORATION

Call made by: David C. Smith
On (Date): July 15, 1993
At (Time): 10:20

Signature/Date: 7/15/93
Facility: Monarch Tile
CERCLIS or EPA ID No: ALD067102301

Person(s) contacted: Robbie Green
Title/Position: Office Manager
Phone: (205) 247-1606
Organization: East Lauderdale Water Department

GENERAL SUBJECT

Number of connections

CONVERSATION SUMMARY

Ms. Green said that the East Lauderdale system serves approximately 1,700 connections with the water derived from the Florence Water Department.

REFERENCE NO. 36

TELEPHONE CONTACT SUMMARY
DYNAMAC CORPORATION

Call made by: David C. Smith
On (Date): July 29, 1993
At (Time): 15:30

Signature/Date: 7/29/93
Facility: Monarch Tile
CERCLIS or EPA ID No: ALD067102301

Person(s) contacted: Joanne Armstead
Title/Position: Administrative Assistant
Phone: (205) 760-6637
Organization: Florence Water Department
Address (City/State): Florence, Alabama

GENERAL SUBJECT

Water supply for the town of Killen

CONVERSATION SUMMARY

Ms. Armstead said that Killen has three active wells and receives additional water by way of an eight inch pipe from the Florence Water Department. She said the water is blended together prior to being distributed to the 2,300 customers. She could not provide an approximate percentage of contribution by any given water source.

REFERENCE NO. 37

TELEPHONE CONTACT SUMMARY
DYNAMAC CORPORATION

Call made by: Betty Ann Pruner
On (Date): August 4, 1993
At (Time): 1100

Signature/Date: Betty Ann Pruner 8/4/93
Facility: Monarch Tile
CERCLIS No: ALD067102301

Person(s) contacted: Mike Doyle
Title/Position: Superintendent of Treatment Plants
Phone: (205) 760-6452
Organization: Florence Water Department
Address (City/State): Florence, Alabama

GENERAL SUBJECT

Killen Water System and Location of Intakes for the Florence Water Department

CONVERSATION SUMMARY

Mr. Doyle said that the Florence Water Department provides a water line to the Killen Water System which is primarily supplied by three wells located within the city limits of Killen. The 4-inch water line provides a supplemental supply of water to the Killen system. Mr. Doyle said the water line was not metered; therefore, he did not know the percentage of water supplied to the Killen Water System by the Florence Water Department. He said that water from the water line was used by Killen whenever the system required extra water.

The two Florence Water Department intakes are located on Cypress Creek near the confluence of Cox Creek and Cypress Creek and on the Tennessee River upstream of Wilson Dam.

REFERENCE NO. 38

TELEPHONE CONTACT SUMMARY
DYNAMAC CORPORATION

Call made by: David C. Smith
On (Date): July 14, 1993
At (Time): 14:00

Signature/Date: 7/14/93
Facility: Monarch Tile
CERCLIS or EPA ID No: ALD067102301

Person(s) contacted: Mike Doyle
Title/Position: Superintendent of Treatment Plants
Phone: (205) 760-6452
Organization: Florence Water Department
Address (City/State): Florence, Alabama

GENERAL SUBJECT

Water intakes and distribution of the Florence Water Department

CONVERSATION SUMMARY

Mr. Doyle said the Florence system operates two surface water intakes one of which is located on Cypress Creek and the other is on Wilson Lake of the Tennessee River. Mr. Doyle said the Cypress Creek intake supplies approximately two thirds of the water for the system.

Mr. Doyle said that the Florence system serves approximately 18,250 connections plus three community water systems. The three community systems include East Lauderdale, West Lauderdale and Chisolm Heights. Mr. Doyle said that the other water systems would have to be contacted in order to obtain the number of connections served by each. Mr. Doyle said these three systems are purchase only systems and have no intakes of their own.

TELEPHONE CONVERSATION SUMMARY

DYNAMAC CORPORATION

Call made by: Cindy Treadway
Date of call: September 14, 1993
Time of call: 0930

Signature/Date: C Treadway 9-14-93
Facility: Reynolds Metals Co. River Rd.
EPA ID No.: ALD000652693

Person(s) contacted: Steve Tucker
Title/Position: Bookkeeper
Organization: Chamber of Commerce of the Shoals

Telephone number: (205) 764-4661
Address (city/state): Muscle Shoals, Alabama

General subject: Operating status of Union Carbide.

Summary of conversation: Mr. Tucker said that Union Carbide no longer operates at the River Road Muscle Shoals location. The parent company of Southern Reclamation is Reynolds Metals Co. River Rd. Southern Reclamation began operating at the River Road Muscle Shoals location in 1984. Southern Reclamation presently employs 51-100 people.

M.2 - SITE MAINTENANCE FORM

* ACTION: _ *

EPA ID : ALD000652693

SITE NAME: REYNOLDS METALS CO RIVER RD PLT SOURCE: R

STREET : RIVER RD CONG DIST: 05

CITY : MUSCLE SHOALS ZIP: 35660

CNTY NAME: COLBERT CNTY CODE : 033

LATITUDE : 34/47/03.7 LONGITUDE : 087/36/00.0

LL-SOURCE: R LL-ACCURACY:

SMSA : 2650 HYDRO UNIT: 06030005

INVENTORY IND: Y REMEDIAL IND: Y REMOVAL IND: N FED FAC IND: N

NPL IND: N NPL LISTING DATE: NPL DELISTING DATE:

SITE/SPILL IDS:

RPM NAME: RPM PHONE: - -

SITE CLASSIFICATION: SITE APPROACH:

DIOXIN TIER: REG FLD1: REG FLD2: 6

RESP TERM: PENDING ( ) NO FURTHER ACTION ( )

ENF DISP: NO VIABLE RESP PARTY ( ) VOLUNTARY RESPONSE ( )
ENFORCED RESPONSE ( ) COST RECOVERY ( )

SITE DESCRIPTION:

* PENDING (_) NO FURTHER ACTION (_) *

M.2 - PROGRAM MAINTENANCE FORM

ACTION: _

SITE: REYNOLDS METALS CO RIVER RD PLT

EPA ID: ALD000652693 PROGRAM CODE: H01 PROGRAM TYPE: _

PROGRAM QUALIFIER: ALIAS LINK :

PROGRAM NAME: SITE EVALUATION

DESCRIPTION:

M.2 - EVENT MAINTENANCE FORM

* ACTION: _ *

SITE: REYNOLDS METALS CO RIVER RD PLT
PROGRAM: SITE EVALUATION

EPA ID: ALD000652693 PROGRAM CODE: H01 EVENT TYPE: DS1

FMS CODE: EVENT QUALIFIER : EVENT LEAD: E * _ ___ _ *

EVENT NAME: DISCOVERY STATUS: * _____ _ *

DESCRIPTION:

* _____ *
* _____ *
* *
* _____ *

ORIGINAL	CURRENT	ACTUAL			
START:	START:	START:	__/__/__	__/__/__	__/__/__
COMP :	COMP :	COMP : 10/01/81	__/__/__	__/__/__	__/__/__

HQ COMMENT:

* _____ *

RG COMMENT:

* _____ *

COOP AGR #	AMENDMENT #	STATUS	STATE %				
			0	_____	_____	__	___

M.2 - EVENT MAINTENANCE FORM

* ACTION: _ *

SITE: REYNOLDS METALS CO RIVER RD PLT
PROGRAM: SITE EVALUATION

EPA ID: ALD000652693 PROGRAM CODE: H01 EVENT TYPE: PA1

FMS CODE: EVENT QUALIFIER : EVENT LEAD: S * _ ___ _ *

EVENT NAME: PRELIMINARY ASSESSMENT STATUS: * _____ _ *

DESCRIPTION:

* _____ *
* _____ *
* *
* _____ *

ORIGINAL	CURRENT	ACTUAL			
START:	START:	START: 10/01/84	* __/__/__	__/__/__	__/__/__ *
COMP :	COMP :	COMP : 11/01/84	* __/__/__	__/__/__	__/__/__ *

HQ COMMENT:

* _____ *

RG COMMENT:

* _____ *

COOP AGR #	AMENDMENT #	STATUS	STATE %				
			0	* _____	_____	__	___ *

M.2 - EVENT MAINTENANCE FORM

* ACTION: _ *

SITE: REYNOLDS METALS CO RIVER RD PLT
PROGRAM: SITE EVALUATION

EPA ID: ALD000652693 PROGRAM CODE: H01 EVENT TYPE: SI1

FMS CODE: EVENT QUALIFIER : EVENT LEAD: S * _ ___ _ *

EVENT NAME: SITE INSPECTION STATUS: * _____ _ *

DESCRIPTION:

* _____ *
* _____ *
* *
* _____ *

ORIGINAL	CURRENT	ACTUAL			
START:	START:	START: 05/01/85	__/__/__	__/__/__	__/__/__
COMP :	COMP :	COMP : 05/02/85	__/__/__	__/__/__	__/__/__

HQ COMMENT:

* _____ *

RG COMMENT:

* _____ *

COOP AGR #	AMENDMENT #	STATUS	STATE %				
			0	_____	_____	__	___

M.2 - COMMENT MAINTENANCE FORM

SITE: REYNOLDS METALS CO RIVER RD PLT

EPA ID: ALD000652693

COM NO	COMMENT	ACTION
001	MAILING ADDRESS: P O BOX 1609 FLORE	_
	NCE ALABAMA 35631	

EPA

POTENTIAL HAZARDOUS WASTE SITE
TENTATIVE DISPOSITION

REGION	SITE NUMBER
IV	ALD000652623

File this form in the regional Hazardous Waste Log File and submit a copy to: U.S. Environmental Protection Agency, Site Tracking System, Hazardous Waste Enforcement Task Force *(EN-335)*, 401 M St., SW, Washington, DC 20460.

I. SITE IDENTIFICATION

A. SITE NAME	B. STREET	
Reynolds Metals Co. River Road Plant	River Road	
C. CITY	**D. STATE**	**E. ZIP CODE**
Muscle Shoals (Colbert Co.)	AL	35660

II. TENTATIVE DISPOSITION

Indicate the recommended action(s) and agency(ies) that should be involved by marking 'X' in the appropriate boxes.

RECOMMENDATION	MARK 'X'	ACTION AGENCY: EPA	STATE	LOCAL	PRIVATE
A. NO ACTION NEEDED -- NO HAZARD					
B. INVESTIGATIVE ACTION(S) NEEDED *(If yes, complete Section III.)*	X		X		
C. REMEDIAL ACTION NEEDED *(If yes, complete Section IV.)*					
D. ENFORCEMENT ACTION NEEDED *(If yes, specify in Part E whether the case will be primarily managed by the EPA or the State and what type of enforcement action is anticipated.)*					

E. RATIONALE FOR DISPOSITION

SI report inadequately written. Returned to state with my comments.

F. INDICATE THE ESTIMATED DATE OF FINAL DISPOSITION *(mo., day, & yr.)*	G. IF A CASE DEVELOPMENT PLAN IS NECESSARY, INDICATE THE ESTIMATED DATE ON WHICH THE PLAN WILL BE DEVELOPED *(mo., day, & yr.)*

H. PREPARER INFORMATION

1. NAME	2. TELEPHONE NUMBER	3. DATE *(mo., day, & yr.)*
Elizabeth M Shaver	(404) 881-2234	6-5-85

III. INVESTIGATIVE ACTIVITY NEEDED

A. IDENTIFY ADDITIONAL INFORMATION NEEDED TO ACHIEVE A FINAL DISPOSITION.

SI Returned to State for rewriting

B. PROPOSED INVESTIGATIVE ACTIVITY *(Detailed Information)*

1. METHOD FOR OBTAINING NEEDED ADDITIONAL INFO.	2. SCHEDULED DATE OF ACTION *(mo.day, & yr)*	3. TO BE PERFORMED BY *(EPA, Contractor, State, etc.)*	4. ESTIMATED MANHOURS	5. REMARKS
a. TYPE OF SITE INSPECTION				
(1)				
(2)				
(3)				
b. TYPE OF MONITORING				
(1)				
(2)				
c. TYPE OF SAMPLING				
(1)				
(2)				

Continued From Front

III. INVESTIGATIVE ACTIVITY NEEDED and PART B - PROPOSED INVESTIGATIVE ACTIVITY *(Continued)*

d. TYPE OF LAB ANALYSIS (1)				
(2)				
e. OTHER *(specify)* (1)				
(2)				

C. ELABORATE ON ANY OF THE INFORMATION PROVIDED IN PART B *(on front & above)* AS NEEDED TO IDENTIFY ADDITIONAL INVESTIGATIVE WORK.

D. ESTIMATED MANHOURS BY ACTION AGENCY

1. ACTION AGENCY	2. TOTAL ESTIMATED MANHOURS FOR INVESTIGATIVE ACTIVITIES	1. ACTION AGENCY	2. TOTAL ESTIMATED MANHOURS FOR INVESTIGATIVE ACTIVITIES
a. EPA		b. STATE	
c. EPA CONTRACTOR		d. OTHER *(specify)*	

IV. REMEDIAL ACTIONS

A. SHORT TERM EMERGENCY STRATEGY *(On Site & Off-Site)* List all emergency actions needed to bring site under immediate control, e.g., restrict access, provide alternate water supply, etc. See instructions for a list of Key Words for each of the actions to be used in the space below.

1. ACTION	2. EST. START DATE *(mo, day, & yr)*	3. EST. END DATE *(mo, day, & yr)*	4. ACTION AGENCY *(EPA, State, Private Party)*	5. ESTIMATED COST	6. SPECIFY 311 OR OTHER ACTION; INDICATE THE MAGNITUDE OF THE WORK REQUIRED
				$	
				$	
				$	
				$	
				$	
				$	

B. LONG TERM STRATEGY *(On Site & Off-Site)* List all long term solutions, e.g., excavation, removal, ground water monitoring wells, etc. See instructions for a list of Key Words for each of the actions to be used in the spaces below.

1. ACTION	2. EST. START DATE *(mo, day, & yr)*	3. EST. END DATE *(mo, day, & yr)*	4. ACTION AGENCY *(EPA, State Private Party)*	5. ESTIMATED COST	6. SPECIFY 311 OR OTHER ACTION; INDICATE THE MAGNITUDE OF THE WORK REQUIRED
				$	
				$	
				$	
				$	
				$	
				$	

C. ESTIMATED MANHOURS AND COST BY ACTION AGENCY

1. ACTION AGENCY	2. TOTAL EST. MANHOURS FOR REMEDIAL ACTIVITIES	3. TOTAL EST. COST FOR REMEDIAL ACTIVITIES	1. ACTION AGENCY	2. TOTAL EST. MANHOURS FOR REMEDIAL ACTIVITIES	3. TOTAL EST. COST FOR REMEDIAL ACTIVITIES
a. EPA			b. STATE		
c. PRIVATE PARTIES			d. OTHER *(specify)*		

REYNOLDS ALUMINUM

REYNOLDS METALS COMPANY • RICHMOND, VIRGINIA 23261

May 17, 1985

MAY 1985
RECEIVED
ADEM
LAND DIVISION

Mr. Daniel E. Cooper
Chief, Land Division
Alabama Department of Environmental Management
1751 Federal Drive
Montgomery, Alabama 36130

Re: RCRA Section 3012 Inspection
Reports - Alloys Plant
& Southern Reclamation Company

Dear Mr. Cooper:

Attached please find our May 13, 1985 and May 14, 1985 letters to your Mr. Stephen C. Maurer outlining our comments on the RCRA Section 3012 inspection reports for our Alloys Plant and our wholly owned subsidiary, the Southern Reclamation Company.

As outlined in our comments, both of the inspection reports contain significant factual errors and contain conclusions and/or recommendations which, in our opinion, are not reasonable or supported by the actual data. In particular, we do not believe that justification exists for the recommendation that additional studies be conducted at each location.

Reynolds is concerned about these reports and the conclusions and/or recommendations they present. We believe that adequate justification exists for the revision of these reports and we stand ready to work directly with your staff to resolve this problem.

Please feel free to contact Mr. C. R. Bent (804/218-2918) or me (804/281-3871).

Very truly yours,

Lawrence C. Tropea, Jr., P. E.
Director, Environmental Control
Environmental Control Department

LCT/plb

Copy: Mr. J. Warr - ADEM
Mr. J. Wagner - RMC
Mr. L. Held - SRC
Mr. C. Bent - RMC

REYNOLDS ALUMINUM
REYNOLDS METALS COMPANY • RICHMOND, VIRGINIA 23261

May 13, 1985

EMERY EXPRESS

Mr. Stephen C. Maurer
RCRA 3012 Program Manager
Land Division
Alabama Department of Environmental Management
1751 Federal Drive
Montgomery, Alabama 36130

Re: Southern Reclamation Company
RCRA 3012
Site Inspection Report

Dear Mr. Maurer:

In conjunction with Southern Reclamation Company personnel, we have made an extensive review of Environmental Protection Sytems, Inc.'s Site Inspection Report. This report contains numerous technically and factually inaccurate statements. As an example, such basic information as the name and location of the site inspected is incorrect. We believe that this report must be corrected and, as stated in these comments, the recommendation for additional study is not appropriate or reasonable.

Please find attached our detailed review of Environmental Protection Systems, Inc.'s report. The review is keyed by section and paragraph to their report and a highlighted copy of their report is also attached.

Southern Reclamation Company has extensive analytical data on the disposal area investigated by the contractor. This analytical data is documented at varying depths throughout the depth of the landfill, and would provide information helpful in your investigation. This data parallels the analytical data presented in this report and includes analytical data for the entire depth of the disposal area. This information can be made available to appropriate state officials.

We firmly believe additional study work is not warranted at this site, and that this site is well managed and maintained. In addition, analytical data is available that would eliminate the needless expenditure of funds for additional investigations.

Finally, we hereby request that you immediately make a copy of our comments available to other Federal or State officials who have previously received a copy of the report.

If you have have any questions, please feel free to contact me at (804) 281-2918.

Sincerely yours,

Charles R. Bent, P. E.
Environmental Engineer
Environmental Control Department

CRB/ych
Attachments

cc: L. L. Held, Plant Manager, Southern Reclamation Co.

RCRA 3012 SITE INSPECTION REPORT

TITLE PAGE

The site inspected is not "Reynolds Metals Company, Alabama Reclamation Plant." The site inspected was the Southern Reclamation Company, and is not now, or has it ever been, named Alabama Reclamation. As you are aware, Reynolds does operate a facility named the Alabama Reclamation Plant at a location several miles from the inspected site. This incorrect information should be deleted from the report.

1.0 EXECUTIVE SUMMARY

As noted above, this facility is not Alabama Reclamation, but the Southern Reclamation Company. Please see comments under "Title Page."

While Southern Reclamation cannot be held accountable for the accuracy of information on Union Carbide's former operations at this site, it is our understanding that the starting date of their operation and the fact that they manufactured electric furnaces is not correct. All incorrect information should be removed from the report.

The total lead analytical data actually ranged from 541 to 2250 ppm and not between 500 to 2,300 ppm as incorrectly referenced in the executive summary. Furthermore, the report states that less than 1 ppm of the total lead was, in fact, leachable. The report fails to highlight that between 99.873 to 99.967% of the total lead in these samples are not leachable and as such, will not adversely

affect human health or the environment. The consultant, however, on the basis of this data, recommends additional tests. We believe this recommendation is not a reasonable recommendation based on the data presented and that no valid need for additional investigative work exists.

2.0 BACKGROUND

2.1 Location

The facility on River Road is not Alabama Reclamation and, as noted in the comments under "Title Page," is the Southern Reclamation Company. Also note that the longitude for the Southern Reclamation Company is improperly listed as 87° 37' 00". The correct longitude is 87° 36' 00". This correct information should be included in the report.

2.3 Ownership History

Please note under "Title Page" that this facility is an independent company, registered in Delaware and licensed to do business in Alabama under the name Southern Reclamation Company. The incorrect information should be deleted from the report.

2.4 Site Use History

This facility does business under the name Southern Reclamation Company as noted under "Title Page." All incorrect references to Alabama Reclamation should be removed from this report.

The use to which the owners of this site put this property after purchasing it in 1980 is not relevant to this report. The statement that the "...economy influenced the decision..." is without a basis of fact and has nothing to do with the historical use of this site. While the plant was not operational prior to and subsequent to the 1980 sale, alleged internal business-related decisions have no place in this report. These irrelevant comments should be removed from this report.

It should be further noted that Southern Reclamation Company, in addition to not treating, storing or disposing of hazardous wastes at this site, has never generated hazardous wastes at this site. Such clarifying language should be included in the report.

In this section of the report the contractor refers to "the company" and "they." Southern Reclamation Company has made no claims of fact concerning previous activities by Union Carbide except as noted in this review document. The report should clearly and unambiguously identify all sources of factual information or data included in the report.

2.5 Permit and Regulatory History

Manufacturing commenced during late 1984 at Southern Reclamation Company. The report incorrectly indicates no manufacturing operations took place during "1980 to mid-1984." This error should be corrected.

2.6 Remedial Actions to Date

No emergency corrective action has ever been determined to be required for this site. There is an implication in the way this section is written that an emergency corrective action was deemed necessary for this location but never performed. This is not the case. There is no evidence presented which would support the need to conduct an emergency corrective action. In fact, the report indicates that Union Carbide installed wastewater treatment systems and that studies concluded that corrective actions were not required. This section should be rewritten indicating that emergency corrective action has been neither required nor performed at this site.

2.7 Summary Trip Report

Please note grammatical errors. These errors should be corrected.

A statement concerning "the pipe" and a "let pipe" is meaningless and confusing. Proper terminology should be used in this report.

The "drainage" referenced in this section is a discharge through an NPDES permitted outfall. The report should clearly indicate that the "drainage" is permitted and neither illegal nor unregulated.

SECTION 3.0

3.1 Topography

The facility inspected is named Southern Reclamation Company. All incorrect references to the facility's name should be removed from the report. Please note comments under "Title Page."

3.2 Surface Waters

Please note that the facility inspected was Southern Reclamation Company and not Alabama Reclamation. The Tennessee River is a boundary line for this facility and is not located "within 4 miles" as incorrectly stated in the report. In addition, Southern Reclamation Company does not discharge wastewater to Pond Creek as incorrectly noted in the report. Comments included in the report concerning Spring Creek, flood plans and Haw Pond are equally incorrect and confuse the actual situation. This incorrect and superfluous information should be deleted from the report.

3.3 Geology and Soils

The facility inspected is named Southern Reclamation Company and it is not located on Second Avenue. Incorrect information concerning site name and location should be corrected.

3.4 Groundwater

This report has incorporated many inaccurate and incorrect statements concerning the identification and location of the site inspected, and we therefore

question the accuracy of this entire section. Based on the other numerous inaccuracies in the report, we question whether our site and the technical hydrogeological data presented are for the Southern Reclamation Company site. This data should be carefully reviewed and only relevant site specific information included in the report.

3.5 Climate and Meteorology

The annual precipitation and evaporation rates stated in this report appear incorrect. No reference is noted in the report specifically for this data and we question its accuracy. This data should be carefully reviewed and only correct site specific data included in this report.

3.6 Land Use

Please note that Alabama Reclamation is not located within 0.1 miles southeast of the Lakeview Heights subdivision and that Alabama Reclamation is not the facility inspected. These inaccurate and incorrect comments should be corrected or deleted from the report.

3.7 Population Distribution

Please note the "Title Page" comment which identifies the name of the facility as Southern Reclamation Company. All incorrect references to the name of this facility should be removed from this report.

3.8 Water Supply

Please note that the name of this facility is Southern Reclamation Company and not Reynolds Metals as noted in the text. In addition, the Southern Reclamation Company does not receive water from the Tennessee River nor is their water treated at the Reynolds Metals Reduction Plant. Southern Reclamation Company receives water from the City of Muscle Shoals. All incorrect information concerning water supply should be removed from the report.

The report indicates that there are numerous springs in Colbert County and that these springs are used for domestic stock and industrial needs. The report fails to note how many springs are in Colbert County or the actual number used for domestic stock or industrial water uses. The report implies that all Colbert County wells are used for domestic stock watering and industrial needs. No evidence is presented or referenced to support this fact. The accuracy of the statement concerning usage of springs in Colbert County is, at best, questionable and the relation of this information to the purpose of this inspection is unclear. All irrelevant data or information should be removed from the report. In addition, all incorrect or inaccurate information should be corrected or removed from the report.

3.9 Critical Environments/Endangered and Threatened Species

Again, please note that the name of the facility inspected is Southern Reclamation Company and not Reynolds Metals. This incorrect information should be removed from the report.

4.0 WASTE TYPES AND QUANTITIES

4.1 Waste Quantities

The 1980 Part A RCRA hazardous waste permit which was submitted for this facility identified three disposal areas containing K092 waste material. The total area identified was 17.1 acres and not 18 acres as noted in the report. Furthermore, the K092 waste material was not reported to be "exposed" in these disposal areas. These disposal areas have cover material including vegetation as noted in the report. The use of the word "exposed" is not descriptive of the disposal areas and, in fact, has a negative connotation not rightly deserving of this facility's past waste management practices. Furthermore, the report makes no reference to the fact that the U. S. EPA removed K092 waste materials from their regulated list after determining it was not, in fact, hazardous. All incorrect information must be removed from the report and clarifying language included indicating K092 waste material as non-hazardous and not regulated by the State of Alabama or the U. S. EPA.

4.2 Waste Disposal Methods and Locations

The generation of emission control sludge and the use of settling ponds were activities conducted by Union Carbide. Southern Reclamation Company has never operated any of the four disposal areas referenced in the report. The report should properly describe the actual situation in regards to these facilities.

The facts do not support the report's contention that not all of the disposal areas were identified in the Part A permit application. The Exhibits 2.1 and 2.2, which are a part of the report, were taken from the Part A permit application. Both exhibits clearly identify, by size, the disposal areas. The disposal areas encompass 1.5, 2..6 and 13.5 acres as noted in the report and Exhibits 2.1 and 2.2. The report should include only factual information and should be in agreement with the Exhibits attached to the report.

4.3 Waste Types

The generation of emission control dust sludge from ferromanganese production, i.e. K092, was done during the time Union Carbide owned this facility. The Part A permit application was filed in 1980 for K092 waste material that was generated and disposed of by Union Carbide. The U. S. EPA declared K092 waste material to be non-hazardous in 1981 and not in 1980 as noted in the report. This section should be expanded to clearly indicate the sequence of events leading up to the U. S. EPA declaring K092 waste material to be non-hazardous in 1981.

5.0 LABORATORY DATA

5.1 Summary

The leaching levels for cadmium, lead, and chromium are extremely low. The percentage of the total samples that are non-leaching are as follows: Cd, 98.5 to 99.02%; Pb, 99.89 to 99.97%; Cr, 99.71 to 99.92%. The samples collected during this site investigation have extremely low leaching levels and the report

should clearly highlight these facts, and the fact that none of the wastes investigated are actually hazardous.

6.0 TOXICOLOGICAL/CHEMICAL CHARACTERISTICS

This entire section has been taken out of context and no meaningful conclusions can be drawn concerning the toxicological information and the analytical data provided in the report. The report does not make any determination as to whether organic or inorganic forms of cadmium, chrome, or lead exists in the samples. Neither does it present data on the presence of chromic acid salts or chromate salts in the samples, yet the toxicological section of the report presents a discourse on the toxicity of such compounds. Similarly, toxicological data on hexavalent chromium is included in the report but no analytical data is presented showing the presence of such compounds at the disposal sites. In fact, no valid scientific link between the toxicological information presentd and the analytical data collected is made in the report. Any conclusions based on the referenced toxicological data, and without toxicological testing of the samples collected during the visit, are unsubstantiated and without a scientific basis. This section should be substantiated by scientifically acceptable toxicological testing or removed from this report.

7.0 CONCLUSIONS AND RECOMMENDATIONS

The actual disposal areas involved in this investigation total 17.1 acres. Only correct and accurate information should be included in this report.

As noted in Section 5.0, extremely low leaching levels were observed in the samples collected during this visit. The conclusion section should therefore highlight the low leaching levels observed, and clearly state that none of the wastes analyzed were hazardous by State or Federal definitions.

As noted in this section, the report states that the contractor was aware of information that indicates the approximate depth of the disposal areas. The report then goes on to conclude that additional work be done to verify the depth of the disposal areas. We take great exception to this recommendation since information on the depth of materials is readily available. Southern Reclamation Company has data available on the depth of these disposal areas, and EP Toxicity data at varying depths which shows that the leachability findings of this study are similar to the situation at lower depths. Southern Reclamation Company would, of course, be willing to make this data available to appropriate State officials. We do not therefore believe that an adequate basis exists for any further work at this site and believe that the report should be modified accordingly.

EXHIBITS

Analytical Reports

Please note that the name of the facility inspected is Southern Reclamation Company and not Reynolds Metals Company or the River Road Plant. Please delete these incorrect references from the report.

RCRA 3012

SITE RANKING SCHEME

Item 1

No definition of hazardous substance is detailed in this document. The Site Inspection Report listed no hazardous substance, yet the Site Ranking Scheme indicates such material is "suspected" at this site. This conclusion is unsupported and unsubstantiated in the report. The item should be reclassifed as "no hazardous substances."

Item 2

There is no evidence in the report substantiating surface or groundwater pollution. The contractor did not, to our knowledge, sample either surface or groundwater. An assessment of "No pathway" or "not known for sure" are the only possible options based on available data. This classification should be changed.

Item 5

This site is fenced or bound by the Tennessee River, all of which limit site access. Visitors are allowed on the plant site only for work-related purposes. This item should be reclassified "low or no potential contact."

RCRA 3012

SITE SAFETY PLAN

Part A

Site:

This location does not operate under the name Reynolds Metals Company or the River Road Plant. The plant is the Southern Reclamation Company, which is an independent and privately held Delaware Corporation qualified to do business in the State of Alabama. This incorrect information should be removed from the Site Safety Plan.

Part B

Waste Type(s):

Throughout the Site Inspection Report, waste material is referred to as "sludge." The Site Safety Plan makes reference to "solid" wastes. Neither the Site Inspection Report nor the Site Safety Plan explains this difference in terminology. Such differences should be clarified or consistent terminology should be used.

Part B

Characteristics:

The Plan describes the plant's wastes as "Toxic." Nothing in the data provided to Reynolds supports a hazardous waste characteristic classification of either Toxic or EP Toxic. The descriptions used under this section are the U. S. EPA hazardous waste characteristics, and the data collected during this study

does not support the conclusion of EP Toxic or Toxic. This assessment should be substantiated by factual information or removed from the plan.

Part C

Hazard Evaluation:

Southern Reclamation Company has never used cyanide at this facility. Southern Reclamation is a reclaimer of aluminum and does not use cyanide. Furthermore, it is our understanding that the former owners of this facility did not use cyanide in their process. While low levels of cyanide are present in the ponds, based on analytical data, only correct information should be included in the plan.

RCRA 3012

SITE SCREENING STUDY FORM

Site Information:

There is no location currently known as Reynolds Metals River Road Plant. The site inspected operates under the name Southern Reclamation Company. This incorrect information should be removed from this form.

The "site manager" is not Mr. Charles Bent. Mr. Bent is an environmental engineer with Reynolds Metals Company and is headquartered in Richmond, Virginia. Only correct information should be included in this form and incorrect information should be deleted.

Site Background:

The Southern Reclamation Company has never used cyanide in the operation of this facility. It has been reported that the former owners/operators did not use cyanide in their process. However, based on analytical results, low levels of cyanide are present in the ponds. Only correct information should be included in this form.

Sampling Requirements:

Southern Reclamation Company did request and receive split samples at the inspection, contrary to the information provided in this form. Only correct information should be included in this form.

POTENTIAL HAZARDOUS WASTES

SITE INSPECTION REPORT

Part 1

Item II

The name of the facility inspected is the Southern Reclamation Company. Southern Reclamation Company is an independent and privately held corporation. The facility inspected is not now, or has it ever been, named Alabama Reclamation. Reynolds Metals Company does operate a facility named Alabama Reclamation at a location several miles from the inspected site. This incorrect information should be removed from this report.

Item III

The Southern Reclamation Company does not currently operate any of the three landfill sites inspected. Therefore, this site is not "active" for the purpose of this inspection report. Only correct information should be included in this report.

In addition, we question the accuracy of the "beginning year" listed in this Site Inspection Report. This information should be carefully reviewed and verified, and only correct information included in this report.

The address listed for the plant engineer is not Alabama Reclamation. Please see Part I, Item II. All incorrect information should be deleted from this report.

POTENTIAL HAZARDOUS WASTE

SITE INSPECTION REPORT (CONT'D)

Part 2

Item III

The gross acreage listed is incorrect. Your Exhibit 2.2 lists 17.1 acres, not 18 acres. Only correct information should be included in this report.

Part 2

Item IV

The concentrations listed are incorrect. The actual analytical data gives total lead levels of between 541 mg/kg and 2,250 mg/kg. The total leachable lead levels vary from below 0.01 mg/kg to 0.74 mg/kg. The lead concentrations are incorrectly listed as varying between 500 to 2,200 mg/kg. All data included in this report should be correct and should accurately reflect data contained elsewhere in this report.

Part 3

Item II

As noted under Part 2, Items III & IV, the listed acreage and lead concentrations are incorrect. Again, all data included in this report should be accurate and correct.

In addition, we seriously question the basis for concluding that there is "contamination of soil" in the sites inspected. Placement of waste materials in landfills does not automatically contaminate soils. There is no evidence presented to support this conclusion. Lacking such evidence, we believe this assessment and the conclusions which follow must be carefully reviewed and corrected.

Part 4

Item II

Southern Reclamation's NPDES and air permits are not inactive. Active permits under these respective programs do exist for the facility. The report should be changed to correctly indicate Southern Reclamation Company's current water and air permit status.

Item III

As noted under Part 2, Item III, the listed acreage is incorrect. Only accurate data should be included in this report.

The accessibility to the entire plant site is restricted due to perimeter fencing and the Tennessee River. This item is incorrect and should be corrected indicating that access to this site is well controlled and that there is no easy site access.

POTENTIAL HAZARDOUS WASTE

SITE INSPECTION REPORT (CONT'D)

Part 5

Item II

The City of Muscle Shoals reportedly gets its drinking water from deep wells located approximately 3 miles from inspection site and not from surface water as indicated in the report. We question the relevance of this information to this inspection and request that only accurate and relevant information be included in the report.

Item III

We question the basis for concluding the "depth to groundwater" and "direction of groundwater flow." There is no evidence presented in the report to support the information provided. Only factual information that can be supported by technical data should be included in this report, and all technical references should be clearly documented.

Item VI

We question the basis for concluding that the inspected sites have less than "impermeable" soil conditions. There is no evidence presented to support this technical conclusion. No permeability tests were conducted by the contractor at the time of this site inspection and no permeability test data is presented in this report. We further question what factual data was used to conclude that there

are contaminated soils, much less soil contamination extending to a depth of from "8-12 feet." Again, there is no evidence presented or referenced indicating any type of soil contamination. The Corp of Engineers Data Inventory referenced on this page should be included in the attachments to the Site Inspection Report, if it is the basis for these conclusions. Unless these conclusions can be supported by site specific factual data, they should be removed from the report.

Part 7

Item II

As noted under Part 1, Item II, the name of the facility inspected is Southern Reclamation Company. Incorrect information should be removed from this report.

Part 8

Item II

As noted under Part 1, Item II, the name of the facility inspected is not Alabama Reclamation. The correct name of the facility inspected is Southern Reclamation Company and this corrected information should be included in the report.

2. PROJECT MANAGEMENT SUMMARY

Wrong

Site Name: REYNOLDS METALS CO. - ALABAMA RECLAMATION

Site Number: ALD000652693

Owner: REYNOLDS METALS COMPANY

Operator: ALABAMA RECLAMATION

Site Status: [X] Active [ ] Inactive [ ] Unknown

Priority: [ ] High [ ] Medium [X] Low [ ] None

Plant or Landfill

3. FINAL DISPOSITION

I. EPS Final Review - Date: 3/28/85

Comments:

Follow Up Required [X] Yes [ ] No

II. ADEM Review - Date: 4/4/85 SOIL

Comments:

Follow-up Action Required [X] Yes [ ] No

III. Final Disposition:

Review & revise Date:

Edited & correct Date:

Transmitted Date:

File close-out Date:

Initiate site inspection Date:

4. ADDITIONAL COMMENTS (ONGOING & FINAL)

RCRA 3012 SITE INSPECTION REPORT

FOR

REYNOLDS METALS COMPANY
ALABAMA RECLAMATION PLANT
ALD000652693
MUSCLE SHOALS, ALABAMA
SITE INSPECTION
JANUARY 15, 1985

Presented to:

Alabama Department of Environmental Management
Montgomery, Alabama

Presented by:

Environmental Protection Systems, Inc.
Jackson, Mississippi
Pensacola, Florida
Mobile, Alabama

Project No. 1.84.174.01
March, 1985

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EXHIBITS
REFERENCES
PHOTOGRAPHS (Not allowed at this facility)

1.0 EXECUTIVE SUMMARY

The Reynolds Metals facility, located on River Road in Muscle Shoals, Alabama, is known as Alabama Reclamation. This facility was purchased in 1980 from the Union Carbide Corporation. Due to economic considerations during this time period, Reynolds Metals has not operated on this site. Operations began in mid-to-late 1984. Due to this, it is apparent that no waste material at this site has been placed there by the Reynolds facility.

The Union Carbide facility began operation at this site in 1940. They were involved in the manufacture of ferro-silicone alloys and electric furnaces. Contaminated waste from the plant resulted from the washing of flue gases and gas scrubbers, which removed non-combustible material for discharge to the atmosphere. Cyanide was also present in the scrubbing process. This cyanide was placed in the destruction unit, which was comprised of chlorination and pH adjustment. In order to meet the suspended solids requirement of their NPDES permit, the solids in this water were settled using a floculator. The solids were settled in at least four areas on the site. They were identified in a Part A application filed by the Reynolds Metals facility. Each of these areas were indicated as having the following acreage: 13.5, 2.6, and 1.5. The solids in these areas are visibly different from surrounding naturally occurring soils. In addition, these areas have been invaded by kudzu and other shallow root system plants. Analysis of the material between 12-18 inches deep in these areas indicates total lead levels present in a range from 500 to 2,300 ppm. EP-toxicity analysis indicated that <1 mg/l of this material was leachable. Further action is recommended to determine the total depth of these disposal areas and whether or not the material at the base is EP-toxic.

2.0 BACKGROUND

2.1 Location

The Reynolds Metals facility on River Road is located at the following address:

Alabama Reclamation
River Road
Muscle Shoals, Alabama 35660
Colbert County (033)
Latitude 34°47'37"
Longitude 87°37'00"

It should be noted that this facility is known in the Alabama Department of Environmental Management (ADEM), as Reynolds Metals-River Road Plant; however, its correct name is Alabama Reclamation Plant. The directions to the plant are as follows: Take Second Avenue to Ford Road. Turn left on Ford Road, travel to River Road and turn right. The plant is located to the left. Refer to Exhibit 2.1 for Topographic Map.

2.2 Site Layout

Exhibit 2.2 is a line drawing of the Reynolds facility indicating the three waste disposal areas. These areas are also indicated in Exhibit 2.1 on the Topographic Map. Access to the facility can be obtained by gates along River Road. The area is fenced, thereby limiting access to plant areas. The northern most border is the Tennessee River.

2.3 Ownership History

This facility is currently owned by the Reynolds Metals Company, 6601 West Broad Street, Richmond, Virginia; 23261. The facility was purchased in 1980 from the Union Carbide Corporation. Purchase was handled through the

Union Carbide Real Estate office in Terrytown, New York. Union Carbide operated this facility from 1940 to 1980.

2.4 Site Use History

As was indicated in Section 2.3, the Reynolds Metals Company purchased the facility in 1980 from the Union Carbide Corporation. Reynolds had anticipated using this facility immediately; however, the economy influenced the decision. Therefore, Reynolds did not begin using the facility until late 1984. The Reynolds facility itself, does not treat, store, or dispose of hazardous waste. Currently process information is proprietary.

Review of the AWIC files for Union Carbide indicated that operations initially began around 1940. The plant was involved in the manufacturing of ferro-silicone alloys in electric furnaces. Contaminated waste from the plant resulted from the washing of flue gases and gas scrubbers, which removed non-combustible materials before discharged to the atmosphere. The solids removed consist principally of carbon and silica. Cyanide was also present in the gases and was removed in the scrubbing process. The company indicates that cyanide had been treated since operations began. Prior to 1965, the company operated a ~~kelsenum~~ carbide furnace at the plant. They indicated that adequate cyanide treatment had been provided the plant since commencement of operation. The primary waste problem was suspended material in the wastewater. This suspended carbonaceous material was the subject of many complaints from boat and property owners. Union Carbide made improvements in their wastewater treatment system in early 1971 to remedy the solids problem. This involved settling the dust in ponds on the facility. Three ponds are located on the property. One is 1.5 acres,

which company?

?

?

another is 2.6 acres, and the third is 13.5 acres. This is indicated as a settling basin on the topographic map. Reynolds Metals filed a Part A application for this plant based on the placement of the emissions control dust in these areas. At that time, it was listed as K092 - emission control dust sludge from ferromanganese production. This was subsequently removed from the Environmental Protection Agency (EPA), generic waste list.

2.5 Permit and Regulatory History

The Union Carbide facility was regulated both under air and water permits throughout its history. The facility primarily generated emissions control dust, which was combined with water and the gas scrubbers. This water was treated prior the discharge to the Tennessee River. In 1980, the Reynolds Metals Company purchased the Union Carbide facility. At that time, they filed a Part A application for the disposal areas present on the site. The Part A application was filed protectively, so the Reynolds facility would not have to file both a Part A and Part B RCRA application. The waste material was tested and interim status application was withdrawn. No manufacturing operation took place between 1980 and mid-1984. Therefore, there were no active permits during this time period.

2.6 Remedial Actions to Date

There is no record of any emergency corrective actions being performed at this site. During the early 1970's, the Water Improvement Commission did have several complaints about the Union Carbide facility. At that time, it was indicated that high amounts of solids were being discharged to the Tennessee River. Subsequently, Union Carbide installed an improved wastewater treatment system. The ASIC, as well as Florence State

University, ran a feasibility study to determine the effective removal of the material from the embayment. This was done in 1971. At that time, it was determined to be undesirable to remove the deposited material. Approximately 12 inches of silt and organic material was found to overlay the carbonaceous solids. Removal of this material would have created an extremely undesirable condition downstream. Therefore, the material was left in the embayment.

2.7 Summary Trip Report

Environmental Protection Systems, Inc. (EPS), conducted a RCRA 3012 site investigation with limited sampling, on January 15, 1985. The sampling team arrived at 8:45 a.m., and met Mr. Earl McGuire, a plant engineer. Weather conditions were clear and cold, with temperatures ranging from 22°F to approximately 38°F during the day. It was slightly winding in the early morning. Weather reports indicated a wind-chill factor of -2°F. The EPS sampling team consisted of Ms. Donalea Dinsmore, Environmental Chemist and Mr. Thomas McAlpin, Field Sampling Support Staff. At that time, it was explained that the current processes at this facility were proprietary, and no pictures were to be allowed of the plant site. Mr. McGuire had been given a copy of the site sampling plan prior to site investigation in order that the areas of concern could be located.

Sampling began at approximately 10:00 a.m., when three samples were composited from the 13.5 acre settling basin (RE-S03-SB). In addition a field replicate sample was also taken (RE-S04-SB). This replicate was taken within a foot of the three soil samples. This 13.5 acre basin appeared to be diked to a level approximately 15 feet above the road surface. The perimeter of this basin was covered in kudzu, which extended

into the basin itself. The pipe was evident around the perimeter of this settling basin and a [illegible] pipe was evident at the north end. The center of the basin was sparsely populated with grasses and bushes. Samples were taken in unvegetated areas and at a depth of approximately 18 inches. Areas of erosion were evident throughout the basin area. Materials within this basin appeared to be somewhat wet and soft. It should be noted that access to this basin would be severely limited, depending upon seasonal considerations. The vegetation around this basin was exceedingly dense and would likely limit access in the spring, summer, and fall.

The next area to be investigated was the 1.5 acre disposal site. This was located north of the water treatment plant. At this plant area, there appeared to be two areas involved. The first was apparently a diked basin due north of the treatment plant. This basin was in the low area beneath the treatment plant, and with little exception, appeared to be covered in kudzu and grasses. Very few roots appeared to extend into the waste material. The dikes appeared to be approximately 5 feet above the level of fill material. Approximately ten trees were located in this area, and twenty to thirty trees were observed in the perimeter. This entire area was in close proximity to the Tennessee River. A swimming area was noted in the slough. Drainage from the area is toward the Tennessee River and the topography slopes approximately 150 to 250 feet over a distance of about 100 feet. Three soil composites were taken in the area near the trees (RE-S01-LA). The samples were taken from a depth of approximately 6 to 12 inches. The second area of concern appeared to be a discharge pond for the treatment plant. This pond was located due west of the treatment plant, and approximately 6 inches of water was evident in this area. A discharge pipe was also noted, extending into this ponded area. Grasses

were noted to be present throughout the area; however, root systems were not evident. In addition, birds were noted to habitat the area. Three samples were taken at the water table in this area (RE-S02-SP). It was estimated that the diameter was approximately 75 yards across.

The sampling team next moved to the 2.6 acre disposal site. This area appeared to be entirely fenced with at least three gates evident. This area appeared to be a naturally low area on the plant site. Prior to taking the samples in the area, a background sample was taken. Immediately adjacent to this disposal area was a hill, which did not appear to have been used for any of the plant activities. No waste-like material was evident, and a sample was taken beneath the vegetation (RE-S07-AS). Initial inspection of this 2.6 acre site indicated that material similar to that seen in the other two disposal sites was evident across the entire area. This area also appeared to be diked and was covered in dried kudzu. A back hoe may have gone over some of the areas in this disposal site, as tire tracks were evident. Two carts of dissimilar material were potentially identified as silica from the furnaces. These were dumped down the side of the hill into the waste area. An abandoned tank, potentially propane, was noted at the top of the hill, as well as an empty metal explosives container. A Composite sample was taken along sparsely vegetated areas on the east side of this disposal area (RE-S05-LA). A small pile of material, dissimilar to the waste material, was included in the sample. The final sample taken in this disposal area was on the southern side of the disposal site. Inspection indicated that the material disposed here was similar to that encountered in other areas (RE-S06-LA). The inspection concluded approximately 1:15 p.m., when the sampling team left the site.

3.0 ENVIRONMENTAL SETTING

3.1 Topography

The Reynolds Metals facility lies in the Tennessee Valley. The land surface is characterized as rolling with a maximum relief of approximately 400 feet and an average altitude of about 600 feet. This area is generally a plateau of moderately even and relatively gentle slopes. Slopes exceeding 10 percent are uncommon on the average. The area in an around the Reynolds Metals facility is fairly flat with slopes less than 5 percent generally present across the area. As this is an industrialized section of the Muscle Shoals area, the plant has generally graded the land where necessary to provide slopes less than 1 percent.

3.2 Surface Waters

The Alabama Reclamation facility is bordered to the north by the Tennessee River. Several sloughs are located in close proximity to the northern most waste disposal area. This facility is located in close proximity to highly developed recreational waters, and the water supply intake is just a short distance downstream from the facility. The major surface water at this facility is the Tennessee River which lies within 4 miles to the north of the site. Wastewater from the Reynolds facilities is discharged to Pond Creek. ~~In addition,~~ approximately 2 miles to the west of the site is Spring Creek ~~which also~~ flows to the Tennessee River. Examination of flood plains in the area indicate that portions of the northern sections of the Reynolds facility are located in flood-prone areas. Approximately 4 miles to the southeast of the site is Haw Pond.

3.3 Geology and Soils

The [redacted] facility on Second Avenue is located in the Tennessee Valley District of the Highland Rim section of the Interior Low Plateau province of the Interior Plains geomorphic division. This area is characterized as a chert belt in the north with a limestone plain along the river. The areas in and around the **Reynolds Metals** facility appear to be mainly Ft. Payne Chert-Tuscumbia Limestone. The Ft. Payne Chert is reported to underlie all of Colbert County. However, in most parts of the county, it is covered by younger rocks. The formation crops out and is well exposed along the southern blocks of the Tennessee River valley and for short distances upstream along some of the major tributaries of the Tennessee River. Ft. Payne Chert in Colbert County consists of gray, light gray, and white crystalline hard limestone containing large quantities of chert which occurs as thick beds and as nodules which are disseminated throughout the limestone. The thickness of the Ft. Payne Chert and subsurface is comparatively uniform; it ranges from 162 to 207 feet and averages 186 feet. The formation is overlain conformably by the Tuscumbia Limestone and is underlain unconformably by the Chattanooga Shale. The Ft. Payne Chert is reportedly a good aquifer. The Tuscumbia Limestone underlays almost all of Colbert County as well. It crops out over large areas in the northern parts of the county. Exposures are common along the bluffs overlooking the Tennessee River and along the valleys and larger tributaries. The Tuscumbia Limestone is a light gray-to-gray, medium bedded, hard, dense, finely crystalline limestone. It contains considerable quantities of chert as nodules and thick beds. In most parts of the county, the formation has been deeply weathered to clay and less than 100 feet of limestone remains.

The predominant type of soil in this area is the Decatur-Dewey. As with most of the soils in the Limestone Valleys and Uplands, these soils are formed from weathering limestone. Topography is gently rolling with predominant slopes from 0-15 percent. The profile characteristics of Decatur soils are deep with dark brownish, loamy surface over a dark reddish, clay-like subsoil. These have moderate permeability and are well drained. Dewey series soils are also deep soils but with brownish, loamy surface over a reddish, clay-like subsoil. They are also moderate permeable and well drained. More than 75 percent of the land of this soil type is considered to prime farmland.

3.4 Groundwater

As was indicated above, both the Ft. Payne chert and Tuscumbia limestone are good aquifers in this area. Groundwater occurs in solution openings from fractures and bedding plains. These openings are best developed in areas such as Spring Creek valley which is to the south and west of the site. Wells in these formations can yield as much as 500 GPM per well. Tuscumbia Spring is the largest spring in Colbert County and one of the largest in Alabama. This spring discharges from Tuscumbia Limestone. This spring has a maximum discharge of about 70 MGD and a minimum discharge of about 6 MGD. This spring appears to be also southwest of the site. The U.S. Army Corps of Engineers owns a well in close proximity to the Reynolds facility. This well taps the Ft. Payne Chert-Tuscumbia Limestone aquifer and is reported to have artesian flow. In the same general vicinity of the site, the U.S. Government also owns a spring. This is known as TVA spring. The water-bearing formation in this case is Ft. Payne Chert. The Town of

Muscle Shoals has a well reportedly a depth 178 feet, also tapping Ft. Payne Chert. Tuscumbia limestone was tapped in a U.S. Geological Survey well at between 200 and 300 feet. Aquifer recharge in Colbert County occurs mainly in late fall, winter, and early spring. Movement of groundwater is generally northward toward the reservoirs formed by the Tennessee River. An Alabama Geological Survey publication for Colbert County indicates that in the winter and spring, when water levels are high and the rock openings are filled, rainfall results in rising water levels over a relatively short period of time. In the summer and fall, when water levels are low and rock openings have been drained, soil moisture has been depleted, and precipitation results in a more gradual rise of water levels--possibly no rise at all. Groundwater discharge consists mainly of evaporation from soil surfaces, transpiration from plant surfaces, discharge from springs, and pumpage from wells.

3.5 Climate and Meteorology

In general, Colbert County can be characterized as having a mild, humid climate. Most of the precipitation is in the form of rain, but snow generally occurs about twice a year. Freezing temperatures generally do not last more than two days. The highest average monthly precipitation generally occurs in March, and the lowest in September. More specifically, the Muscle Shoals area receives an annual precipitation of about 48 inches, at an annual evaporation rate of 33.8 inches for a net precipitation of 14.2 inches. The one-year 24-hour rainfall is reportedly 3.25 inches with a maximum 24-hour precipitation recorded at 7.8 inches. On a seasonal basis, the Muscle Shoals area receives a winter average of 15.6 inches, a spring average of 13.5 inches, a summer average of 10.4 inches, and a fall

average of 8.6 inches. The annual snowfall is reportedly 2.9 inches. Seasonal temperatures range from a winter average low of 42.9°F to a summer average of 78.9°F.

3.6 Land Use

The facility is bordered to the north by the Tennessee River. The Tennessee River is used for drinking water, hydroelectric power and recreation. The Tennessee Valley Authority (TVA) has a large power plant west of the facility and operates the Wilson Dam. Several major manufacturing operations are located also to the south of the facility. To the east of the facility, the area becomes mainly cropland and pastures. Residential areas are located along the Tennessee River backwaters both to the east and west of the facility. The Lakeview Heights subdivision is located within 0.1 miles south and east of the Alabama Reclamation facility. The Lakeview subdivision is located within 0.75 miles due west of the site. The population center of Muscle Shoals is approximately 5 miles west of the site. The Muscle Shoals Airport is located within 3 miles to the southwest.

3.7 Population Distribution

SRC

The Reynolds Metals facility is outside of the Muscle Shoals city limits. The area is primarily industrial with few residences evident. This area is greater than three miles from the population of Muscle Shoals. To the east of the site, the land use is primarily farmland and, therefore, is not highly populated. Approximately a mile and a half northwest of the site are two subdivisions--Lake View Highland and Steenson Hollow. Southwest of

the site is the Muscle Shoals Airport. There are few residences surrounding this area as well. It appears that the largest population affected by this site would be employees of the Reynolds Metals facility.

3.8 Water Supply

WRONG - MSC water

Reynolds Metals gets its drinking water supply from the Tennessee River. This water is treated at the Reynolds Metals reduction plant before being directed to the individual facilities. The city of Muscle Shoals uses the Tennessee River for its water source. Water supply records indicate that in the late 1950's and early 1960's, the city of Muscle Shoals had a groundwater well for public use. The status of this well is unknown at this time. Numerous springs are present in Colbert County. These springs are used for domestic stock and industrial needs.

3.9 Critical Environments/Endangered and Threatened Species

The Reynolds Metals facility does not lie in a critical habitat of an endangered species. The critical for the Alabama cave fish is approximately 10 miles northwest of the Reynolds Metals facility along the Tennessee River. The species of concern in this area are listed as follows:

Species Common Name	Range	Status
Gray Bat	Eastern 2/3 Alabama	Endangered Fed
Bald Eagle	Statewide	Endangered Fed
Golden Eagle	Statewide	Endangered Alabama
Peregrine Falcon	Statewide	Endangered Fed
Osprey	Statewide	Endangered Fed
Tuscumbia Darter	Springs of Tenn. River drainage system	Threatened Alabama
Alabama Cave Fish	Key Cave along Tenn. River	Critical habitat Alabama

4.0 WASTE TYPES AND QUANTITIES

4.1 Waste Quantities

No hazardous waste is currently being generated at this facility. In 1980, permit application for RCRA interim status indicated that K092 sludge was exposed on approximately 18 acres of land. It is unknown to what depth this material was present. Information in the AWIC files indicates that several earthen basins were present on this site. These ranged in depth from 8-12 feet.

4.2 Waste Disposal Methods and Locations

Air emissions control sludge was disposed in settling ponds on the plant site. This was done in order to meet the suspended solids requirement in their discharge permit. Four areas were observed at the plant site. The largest area is a 13.5 acre settling basin, which is located east of the manufacturing operations. This is shown on the topographic map. The next area is located to the west and slightly north the main manufacturing buildings. It is approximately 2.6 acres. The final two areas are located in the vicinity of the water treatment plant. One disposal area is located north of the plant, while the second area is located to the west of the plant. These comprise approximately 1.5 acres. With the exception of the basin west of the water treatment plant, each of these areas was indicated in the Part A application for the facility. The basin to the west of the water treatment plant was observed during the site investigation.

4.3. Waste Types

The Union Carbide facility generated emission control dust sludge from ferromanganese production. This was listed as K092 on the original RCRA regulations; however, by 1980, this was deleted from the listing. There are no other known hazardous wastes being generated at this facility.

5.0 LABORATORY DATA

5.1 Summary

Sample locations are described as follows:

Sample Number	Matrix	Description
RE-S01-LA	Waste	Composite from disposal area north of water treatment plant. Indicated size, 1.5 acres. Sample taken near the cluster of approximately ten trees.
RE-S02-LA	Waste	Composite from discharge pond west of water treatment plant. Sample taken at water table level.
RE-S03-SB	Waste	Composite of three holes in 13.5 acre settling basin area.
RE-S04-SB	Waste	Composite of waste material in 13.5 acre disposal site south of previous sample (RE-S03-SB).
RE-S05-LA	Waste	Composite on the east side of the 2.6 acre disposal area. A small pile of dissimilar material was included in this composite.
RE-S06-LA	Waste	Composite of typical waste material in 2.6 acre disposal site.
RE-S07-AS	Soil	Background sample taken on the top of the hill, immediately adjacent to the 2.6 acre disposal area.
RE-S08-LA	Waste	Field replicate of RE-S03-SB. Sample taken and composited along side the referenced sample. Each hole was within 2 feet of its replicate.

Sample results, as well as quality control information is presented in Exhibit 5.1. To summarize these results, cadmium and lead were found in concentrations greater than the background level (cadmium ranged from 4.7 to 7.1 mg/kg, as opposed to 0.9 mg/kg in the background. Lead ranged from 541 to 2,250 mg/kg, as opposed to 28.8 mg/kg in the background).

EP-toxicity leachate for these metals indicated only small amounts of cadmium were leachable (less than 0.1 mg/l). Leachable lead generally ranged in the vicinity of 0.7 mg/l. Background levels for chromium were approximately 23 mg/kg, The maximum determined concentration of any of the waste material was approximately 65 mg/kg. EP-toxicity leachate of these samples indicated a maximum leachable chromium of 0.07 mg/l. Total cyanide levels varied from a background range of 2.5 mg/kg to 11.5 mg/kg. These results averaged approximately 5 mg/kg.

5.2 Quality Assurance Review

All sample collection, sample preservation and chain-of-custody procedures used during this investigation were conducted in accordance with the standard operating procedures as specified in the Quality Control/Quality Assurance Plan for the Analytical and Environmental Division of Environmental Protection Systems, Inc., revised August 31, 1984. All laboratory analyses and quality assurance procedures used during this investigation were in accordance with standard procedures and protocols in the above specified document. Spiking levels and recovery data area attached in the analytical report presented in Exhibit 5.1. No suspect data or deviation from established protocol was noted.

6.0 TOXICOLOGICAL/CHEMICAL CHARACTERISTICS

Cadmium compounds had been given an overall SAX rating of 3 with the human inhalation TCLo:39 $mg/m^3/20m$. Cadmium has been reported as an experimental carcinogen with an oral toxicity of its compounds reportedly high. Fatal poisoning does not occur as a rule because the irritation and emetic action are so violent that little cadmium is absorbed. Cases of cadmium poisoning are generally as a result of ingestion of food or beverages prepared or stored in cadmium plated containers. The inhalation of fumes or dust of cadmium primarily affects the respiratory tract. Kidneys may also be affected.

Chromic acid salts are known to have a corrosive action on the skin and mucus membranes. Lesions are usually confined to the exposed parts of the body, chiefly the skin in the hands and forearms and the mucus membrane of the nasal septum. Chromate salts are experimental and human carcinogens of the lungs, nasal cavities, paranasal sinus, and also experimental carcinogens of the stomach and larnyx. Hexavalent chromium compounds are known to be more toxic than the trivalent.

Lead is a cumulative poison. Increasing amounts build up in the body, and eventually a point is reached where symptoms and disability occur. The lead produces a brittleness of red blood cells to which they hemolyze with but slight trauma; the hemoglobin is not affected. The presence of lead-bearing materials or lead compounds in industrial plants does not necessarily result in exposure on the part of workmen. The lead must be in such a form and so distributed as to gain entrance into the body or tissues in measurable quantities. Otherwise, no exposure can be said to exist. Three

modes of entry are reported into the body: (1) by inhalation of dust fumes, mists of vapors; (2) by ingestion of lead compounds trapped in the upper respiratory tract or introduced into the mouth on food, tobacco, fingers, or other objects; and (3) through the skin. This route is of special importance in the case of organic compounds of lead such as tetra ethyl lead. The toxicity of various lead compounds appears to depend on several factors: (1) the solubility of the compound in the body fluids; (2) the fineness of the particles of the compound; solubility is greater in proportion to the fine mist of the particles; (3) conditions under which the compound is being used.

7.0 CONCLUSIONS AND RECOMMENDATIONS

There are four distinct areas on the plant site where waste material is evident. The largest of these areas are located immediately to the east and immediately to the west of the plant manufacturing operations. The total area comprised in these disposal sites is approximately 18 acres. The 1.5 acre site located by the water treatment plant is actually two distinct areas. One is located north of this treatment plant and the other is located to the west of the treatment plant.

The following heavy metals were determined: cadmium, chromium, and lead. Of these, cadmium and lead were determined to be present in levels significantly higher than the background sample. Cadmium levels in this material ranged in the vicinity of 5 ppm. Leachable cadmium was determined to be present in quantities less than 0.1 mg/l. Analysis for total lead indicated its presence in concentrations ranging from 500 to 2,300 ppm. The largest concentrations of lead were found in the 13.5 and 2.6 acre disposal site. EP-toxicity analysis indicated leachable lead in quantities at approximately 0.7 mg/l. Each of the disposal areas appeared to be covered with vegetation. This vegetation was typified by kudzu and shallow root system plants. At this time, the depth of the disposal area is unknown. Past information indicates the approximate depths are from 8-12 feet. Although these areas are covered in vegetation, the acreage involved appears to be easily determined as material is evident at the surface. Further work is recommended in order to determine the depth of the material and whether the material at the base of the disposal site displays the characteristics of EP-toxicity. Any potential environmental impact is unknown at this time.

EXHIBITS

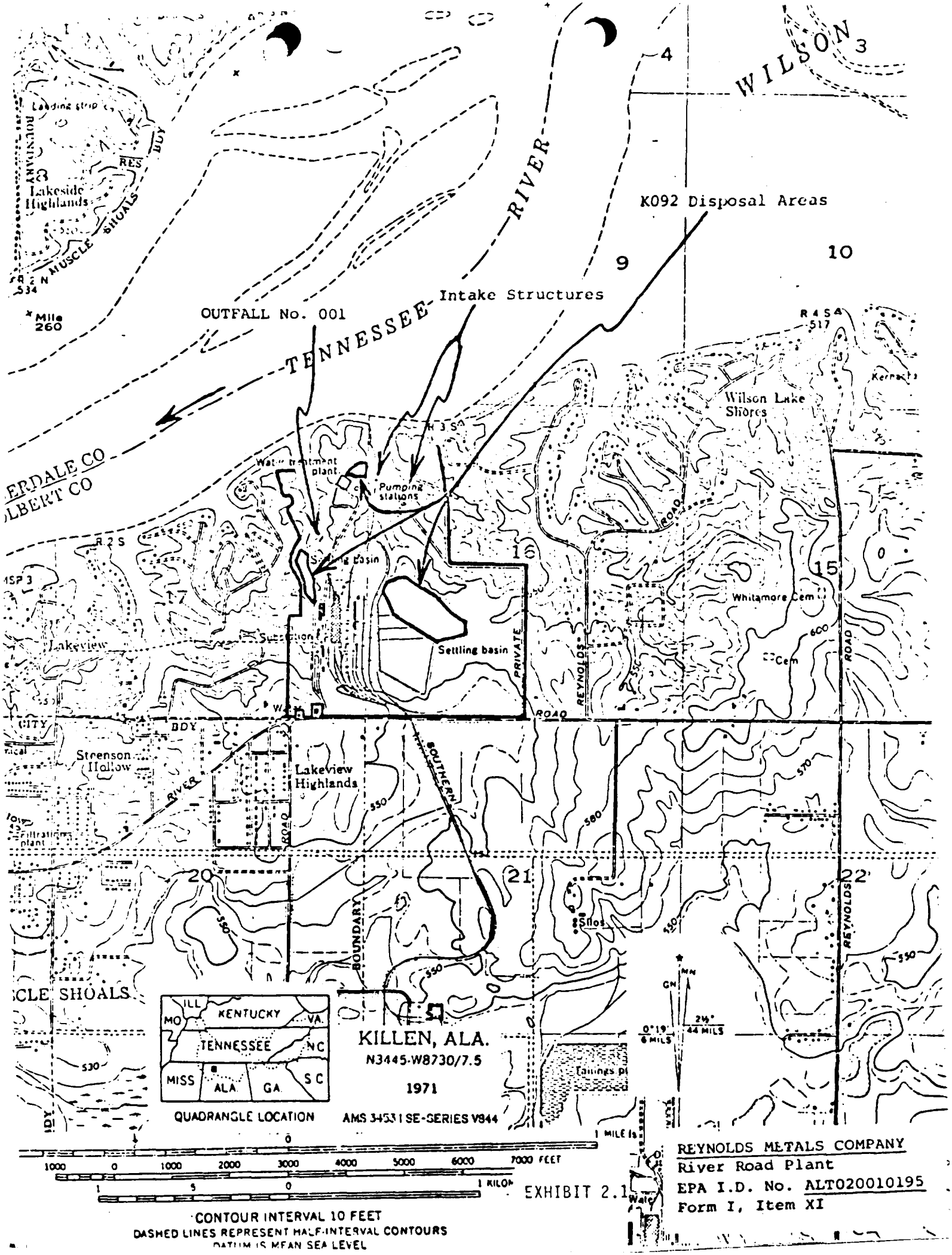

EXHIBIT 2.1

REYNOLDS METALS COMPANY
River Road Plant
EPA I.D. No. ALT020010195
Form I, Item XI

EPA I.D. No. ALT020010195
Form 3, Item V.

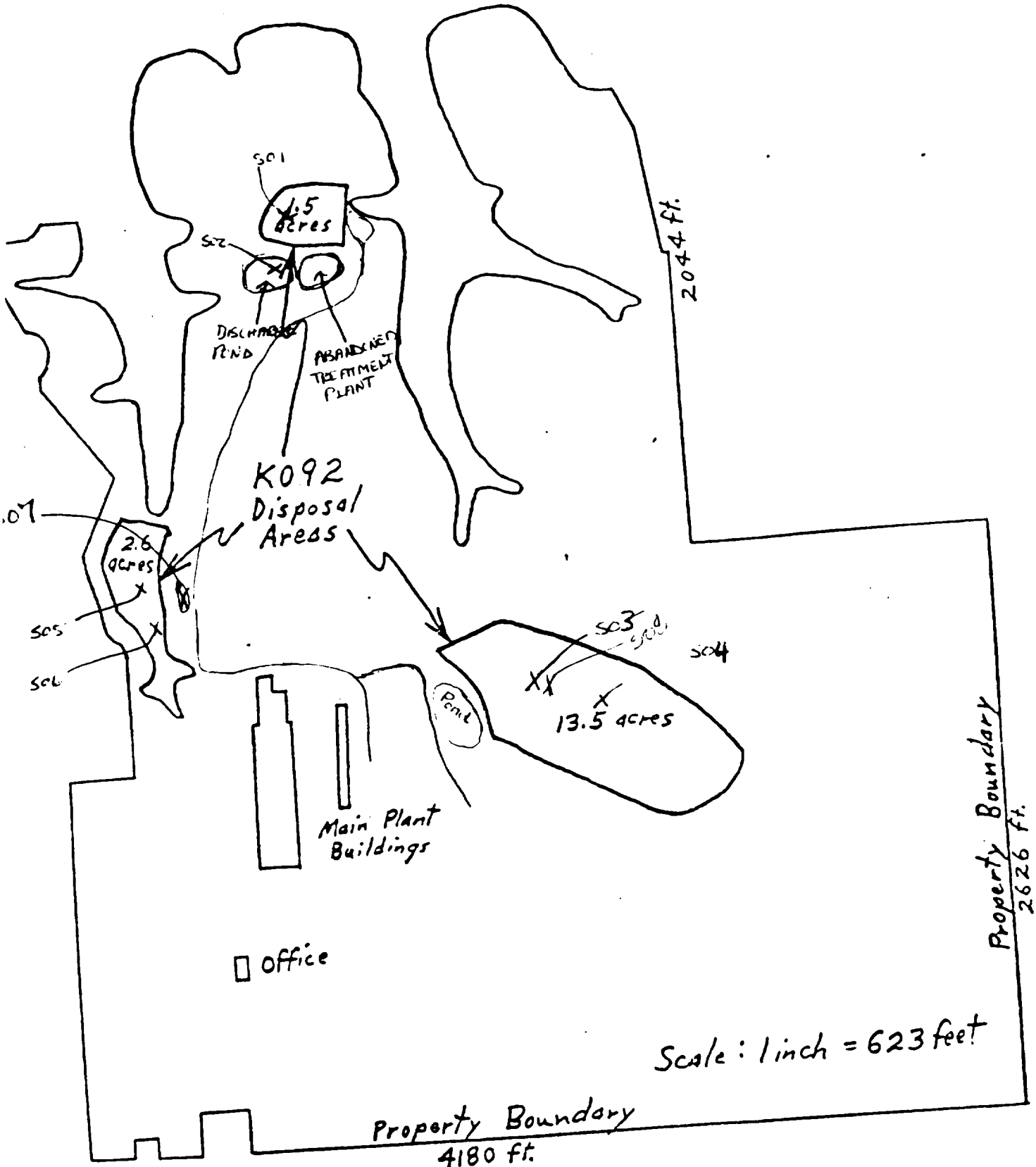

EXHIBIT 2.2

ENVIRONMENTAL PROTECTION SYSTEMS, INC.

P O Box 20382
106 Upton Dr
Jackson Ms 39209
601 922 8242

7215 Pine Forest Rd
Pensacola Fl 32506
904 944 0301

ANALYTICAL REPORT

Date: March 12, 1985

Site: Reynolds Metals Company
River Road Plant
Muscle Shoals, Alabama

Matrix: Soil

Client: Alabama Department of Environmental Management

Date Received: January 18, 1985

EPS Lab No.	EPS Field Identification
85010282	RE-S01-LA
85010283	RE-S02-LA
85010284	RE-S03-SB
85010285	RE-S04-SB
85010286	RE-S05-LA
85010287	RE-S06-LA
85010288	RE-S07-AS
85010289	RE-S08-LA

Attached sheets list results of our analysis of above samples for: Cadmium, Chromium, Lead, and Cyanide

Analytical Reference No.: 85.1.355

EXHIBIT 5.1

Albert A. Johnston
Associate Director of Analytical Services

ENVIRONMENTAL PROTECTION SYSTEMS, INC.

P O Box 20382
106 Upton Dr
Jackson Ms 39209
601 922 8242

7215 Pine Forest Rd
Pensacola Fl 32506
904 944 0301

ANALYTICAL REPORT

Date: March 12, 1985

Site: **Reynolds Metals Company**
River Road Plant
Muscle Shoals, Alabama

Matrix: Soil

Client: Alabama Department of Environmental Management

Date Received: January 18, 1985

Spiking and Recovery Data

EPS Lab No. 85010290

Parameter	Spiking Level (ppm)	Percent (%) Recovery
Cadmium	5.0	100.7
Chromium	5.0	108.0
Lead	20.0	102.3
Cyanide	0.60	82.0

Herbert A. Johnston

Associate Director of Analytical Services

ENVIRONMENTAL PROTECTION SYSTEMS, INC.
P.O. Box 20382 • 160 Upton Drive • Jackson, MS 39209
Telephone: (601) 922-8242
7215 Pine Forest Road • Pensacola, FL 32506
Telephone: (904) 944-0301

LABORATORY REPORT

85.1.355 | 1/2

CLIENT: Alabama Dept. of Environmental Mgmt.
LOCATION: Mongomery, Alabama
DATE: 03/13/85
INVOICE NO.: To be invoiced/bp

COLLECTED BY: EPS (174)
DATE COLLECTED: 01/15/85
DATE RECEIVED: 01/18/85
DATE ANALYZED: 03/12/85

LABORATORY SAMPLE IDENTIFICATION

85010282 - RE - S01 - LA
85010283 - RE - S02 - LA
85010284 - RE - S03 - SB
85010285 - RE - S04 - SB

ANALYSES	IDENTIFICATION NUMBER 282	283	284	285
Cadmium, Total, mg/kg	5.5	5.5	7.1	5.0
Cadmium, "EP Toxicity" Leachate, mg/l	0.08	0.08	0.09	0.06
Chromium, Total, mg/kg	17.8	15.0	52.0	53.0
Chromium, "EP Toxicity" Leachate, mg/l	0.07	0.07	0.07	0.03
Lead, Total, mg/kg	813	541	1,230	1,570
Lead, "EP Toxicity" Leachate, mg/l	0.72	0.69	0.73	0.59
Cyanide, Total, mg/kg	4.8	5.9	7.9	11.5
"EP Toxicity" Extraction	yes	yes	yes	yes

COMMENT

Analyses conducted in accordance with 40 CFR, Part 261, May, 1980, Test Methods for Evaluating Solid Waste. Metal analysis reported on a dry weight basis. All samples collected under RCRA 3012 Program at Reynolds Metals Co., River Road Plant, Muscle Shoals, Alabama.

CERTIFICATION

Jennie K. White
MANAGER, CHEMICAL LABORATORY

Herbert A. Johnston
DIRECTOR, ANALYTICAL SERVICES

ENVIRONMENTAL PROTECTION SYSTEMS, INC.
P.O. Box 20382 • 160 Upton Drive • Jackson, MS 39209
Telephone: (601) 922-8242
7215 Pine Forest Road • Pensacola, FL 32506
Telephone: (904) 944-0301

LABORATORY REPORT 85.1.355 2/2

CLIENT: Alabama Dept. of Environmental Mgmt.
LOCATION: Montgomery, Alabama
DATE: 03/13/85
INVOICE NO.: To be invoiced/bp

COLLECTED BY: EPS (174)
DATE COLLECTED: 01/15/85
DATE RECEIVED: 01/18/85
DATE ANALYZED: 03/12/85

LABORATORY SAMPLE IDENTIFICATION

85010286 - RE - S05 - LA
85010287 - RE - S06 - LA
85010288 - RE - S07 - AS
85010289 - RE - S08 - LA

ANALYSES	IDENTIFICATION NUMBER 286	287	288	289
Cadmium, Total, mg/kg	5.2	4.7	0.9	5.5
Cadmium, "EP Toxicity" Leachate, mg/l	0.09	0.02	0.01	0.08
Chromium, Total, mg/kg	25.7	52.5	22.8	64.6
Chromium, "EP Toxicity" Leachate, mg/l	0.04	<0.01	<0.01	0.06
Lead, Total, mg/kg	2,170	2,250	28.8	1,052
Lead, "EP Toxicity" Leachate, mg/l	0.71	0.15	<0.10	0.74
Cyanide, Total, mg/kg	1.2	8.4	2.5	4.4
"EP Toxicity" Extraction	yes	yes	yes	yes

COMMENT

Analyses conducted in accordance with 40 CFR, Part 261, May, 1980, Test Methods for Evaluating Solid Waste. Metal analysis reported on a dry weight basis. All samples collected under RCRA 3012 Program at Reynolds Metals Co., River Road Plant, Muscle Shoals, Alabama.

CERTIFICATION

Jeanie K. Wint
MANAGER, CHEMICAL LABORATORY

Herbert A. Johnston
DIRECTOR, ANALYTICAL SERVICES

Receipt for Samples
RCRA 3012 Hazardous Waste Site Inventory

Name of Facility/Site: [illegible]

Facility/Site Location: [illegible]

Samplers: [illegible]

Date: 1-17-85

Split Samples Offered: X accepted ____ declined

Station No.	Time	Composite	Grab	Station Description	No. of Containers	Remarks
1. GT-S01-PB	9:45	X			3	AE, BN, VOA, PI
2. GT-[illegible]-SI	11:20	X		(LARGER - BY ROAD 2½-4')	3	"
3. GT-S03-SI	2:25	X		(SMALL EK 2-4')	3	"
4. GT-[illegible]-SI	11:30	X		SURFACE IMPOUNDMENT (4½-5 FT - OILY MATERIAL)	3	"
5. GT-S05-DP	10:38	X		1-P	2	AE, BN, VOA
6. GT-S06-DP	3:45	X		2 (ON HILL BX NOT [illegible])	2	"
7. GT-S07-DP	—	—			0	—
8. GT-S08-FR	3:10	X		FIELD REPLICATE OF GT-S03-SI (CORE 2' FROM 1st BORING)	2	"
9.						
10.						

Receipt Transferred by: Donalea Dinsmore

Date: 1-17-85

Time: 4:10

Receipt Received by: John R. Burton Jr

Telephone: 305-546-6341 [illegible]

Title: [illegible]

Date: 1-17-85

Time: 4:[illegible] P.M.

CADMIUM COMPOUNDS

NIOSH #: EV 0260000

TOXICITY DATA: 3 CODEN:
ihl-hmn TCLo:1500 ug/m3/14Y-1:CARC ANYAA9 271,273,76

Toxicology Review: STEVA8 2(4),341,74. Occupational Exposure to Cadmium recm std: Air: TWA 40 ug/m3; CL 200 ug/m3/15M NTIS**.

THR: An exper CARC. The oral toxicity of Cd and its compounds is HIGH. However, when these materials are ingested, the irr and emetic action is so violent that little of the Cd is absorbed and fatal poisoning does not as a rule ensue. Cases of human Cd poisoning have been reported from ingestion of food or beverages prepared or stored in Cd-plated containers. The inhal of fumes or dusts of Cd primarily affects the respiratory tract; the kidneys may also be affected. Even brief exposure to high conc may result in pulmonary edema and death. Usually the edema is not massive, with little pleural effusion. In fatal cases, fatty degeneration of the liver and acute inflammatory changes in the kidneys have been noted. Ingestion of Cd results in a gastrointestinal type of poisoning resembling food poisoning in its symptoms. Inhal of dust or fumes may cause dryness of the throat, cough, headache, a sense of constriction in the chest, shortness of breath (dyspnea) and vomiting. More severe exposure results in marked lung changes, with persistent cough, pain in the chest, severe dyspnea and prostration which may terminate fatally. X-ray changes are usually similar to those seen in broncho-pneumonia. The urine is frequently dark. These symptoms are usually delayed for some hours after exposure, and fatal conc may be breathed without sufficient discomfort to warn the workman to leave the exposure. There is some evidence of teratogenicity. Ingestion of Cd results in sudden nausea, salivation, vomiting and diarrhea and abdominal pain and discomfort. Symptoms begin almost immediately after ingestion. A yellow discoloration of the teeth has been reported in workers exposed to Cd. Cadmium oxide fumes can cause metal fume fever resembling that caused by zinc oxide fumes.

CADMIUM DIAMIDE

mf: CdH_4N_2; mw: 144.45

Incomp: Self-explodes (water).

CADMIUM DIAZIDE

mf: CdN_6; mw: 196.44

Incomp: Explodes violently.

CADMIUM DICYANIDE

mf: C_2CdN_2; mw: 164.44

Incomp: Magnesium.

CADMIUM (II) EDTA COMPLEX

CAS RN: 15954913 NIOSH #: AH 4060000

SYN: (ETHYLENEDINITRILO)TETRAACETIC ACID CADMIUM (II) COMPLEX

TOXICITY DATA: 3 CODEN:
ipr-mus LD50:7800 ug(Cd)/kg PABIAQ 11,853,63

Occupational Exposure to Cadmium recm std: Air: TWA 40 ug/m3; CL 200 ug/m3/15M NTIS**.

THR: HIGH ipr. See also cadmium compounds.

Disaster Hazard: When heated to decomp it emits tox fumes of NO_x and Cd.

CADMIUM FLUOBORATE

CAS RN: 14486192 NIOSH #: EV 0525000
mf: B_2CdF_8; mw: 286.02

SYN: FLUOROBORATE

TOXICITY DATA: 3 CODEN:
orl-rat LDLo:250 mg/kg NCNSA6 5,27,53
ihl-mus LCLo:650 mg/m3/10M NDRC** No.9-4-1-19,44

Occupational Exposure to Cadmium recm std: Air: TWA 40 ug/m3; CL 200 ug/m3/15M NTIS**. Reported in EPA TSCA Inventory, 1980.

THR: HIGH orl. MOD ihl. See fluoborates.

Disaster Hazard: When heated to decomp it emits very tox fumes of Cd and F^-.

For further information see Fluoroborate Vol. 2, No. 3 of *DPIM Report.*

CADMIUM FLUORIDE

CAS RN: 7790796 NIOSH #: EV 0700000
mf: CdF_2; mw: 150.40

Cubic white crystals. mp: 1100°, bp: 1758°, d: 6.64, vap. press: 1 mm @ 1112°.

SYN: CADMIUM FLUORURE (FRENCH)

TOXICITY DATA: 3 CODEN:
scu-frg LDLo:280 mg/kg CRSBAW 124,133,37

Toxicology Review: AMSSAQ 400,5,63. OSHA Standard: Air: TWA 200 ug(Cd)/m3; CL 600 (SCP-W) FEREAC 39,23540,74. Occupational Exposure to Cadmium recm std: Air: TWA 40 ug/m3; CL 200 ug/m3/15M NTIS**. Reported in EPA TSCA Inventory, 1980.

THR: HIGH via scu route. Violent reaction with K. See fluorides and cadmium compounds.

Disaster Hazard: When heated to decomp it emits very tox fumes of Cd and F^-.

CADMIUM FLUOSILICATE

CAS RN: 17010218 NIOSH #: EV 0875000
mf: CdF_6Si; mw: 254.49

Hexagonal, colorless crystals.

SYN: TL 1070

TOXICITY DATA: 3 CODEN:
orl-rat LDLo:100 mg/kg NCNSA6 5,27,53
ihl-mus LCLo:670 mg/m3/10M NDRC** No.9-4-1-19,44

Occupational Exposure to Cadmium recm std: Air: TWA 40 ug/m3; CL 200 ug/m3/15M NTIS**.

EXHIBIT 6.0

TOXICITY DATA:
Currently tested by NTP for carcinogenesis by standard bioassay protocol as of December 1980.
THR: No data. Under CARC test.
Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

CADMIUM

CAS RN: 7440439 NIOSH #: EU 9800000
mf: Cd; mw: 112.40

Hexagonal crystals, silver-white malleable metal. mp: 320.9°, bp: 767 ± 2°, d: 8.642, vap. press: 1 mm @ 394°.

SYNS:
C.I. 77180 KADMIUM (GERMAN)

TOXICITY DATA: 3	CODEN:
ivn-rat TDLo:1250 ug/kg/(9D preg):TER	EVHPAZ 28,245,79
ipr-mus TDLo:2248 ug/kg/(8D preg):TER	TJADAB 13,33A,76
ivn-ham TDLo:2 mg/kg/(8D preg):TER	EXPEAM 25,56,69
ims-rat TDLo:45 mg/kg/4W-I:NEO	NCIUS* PH-43-64-886,SEPT,71
ims-rat TD:70 mg/kg:ETA	BJCAAI 18,124,64
ims-rat TD:63 mg/kg:ETA	NATUAS 193,592,62
ihl-man TCLo:88 ug/m3/8.6Y:SYS	AEHLAU 28,147,74
ihl-hmn LCLo:39 mg/m3/20M	AIHAAP 31,180,70
unk-man LDLo:15 mg/kg	85DCAI 2,73,70
orl-rat LD50:225 mg/kg	TXAPA9 41,667,77
ipr-rat LD50:4 mg/kg	TXAPA9 41,667,77
scu-rat LD50:9 mg/kg	TXAPA9 41,667,77
ivn-rat LD50:3 mg/kg	TXAPA9 41,667,77
unk-rat LD50:712 mg/kg	GTPZAB 22(5),6,78
unk-mus LD50:636 mg/kg	GTPZAB 22(5),6,78
orl-rbt LDLo:70 mg/kg	AMPMAR 34,127,73
scu-rbt LDLo:6 mg/kg	PROTA* -,-,55
ims-ham LDLo:25 mg/kg	NCIUS* PH-43-64-886
cyt-ham:ovr 1 umol/L	CGCGBR 26,251,80
ipr-rat TDLo:1124 ug/kg (1D male)	TXAPA9 41,194,77
scu-rat TDLo:250 ug/kg (19D preg)	APTOD9 19,A122,80
orl-mus TDLo:448 mg/kg (MGN)	AEHLAU 23,102,71

Carcinogenic Determination: Animal Positive IARC** 2,74,73.
TLV: Air: 0.05 mg/m3 DTLVS* 4,59,80; TRBMAV 33(1),85,75; JDSCAE 58(12),1767,75; JFDSAZ 39,321,74; AMBOCX 3(2),55,74; QURBAW 7(1), 75,74; AEMBAP 40,239,73; NTIS** PB-221,198; KOTTAM 11(11),1300,75; FOREAE 7,313,42; STEVA8 2(4),341,74; FCTXAV 9,105,71; AJMEAZ 38,409,65; ENVRAL 4,71,71; 85CVA2 5,63,70; PEXTAR 12,102,69; PDTNBH 6,204,77; BNYMAM 54,413,78; AMTODM 3,209,77; GSAMAQ 123, 109,71. OSHA Standard: Air: TWA 200 ug/m3; CL 600 (SCP-W) FEREAC 39,23540,74. Occupational Exposure to Cadmium recm std: Air: TWA 40 ug/m3; CL 200 ug/m3/15M NTIS**. "NIOSH Manual of Analytical Methods" VOL 1 191,223,224, VOL 3 S312, S313, VOL 5 173#. Reported in EPA TSCA Inventory, 1980.
THR: MUT data. An exper TER, NEO, ETA, CARC. A human SYS. HIGH hmn ihl, unk. HIGH orl, ipr, scu, ivn, ims. MOD unk. See also cadmium compounds.
Fire Hazard: Mod, in the form of dust when exposed to heat or flame or by chemical reaction with oxidizing agents, metals, HN_3, Zn, Se and Te.
Explosion Hazard: Mod, in the form of dust when exposed to flame.
Disaster Hazard: Dangerous; cadmium dust can react vigorously with oxidizing materials.
For further information see Vol. 1, No. 1 and Vol. 3, No. 5 of *DPIM Report.*

CADMIUM (II) ACETATE

CAS RN: 543908 NIOSH #: EU 9810000
mf: $C_2H_4O_2 \cdot 1/2Cd$; mw: 116.25

Monoclinic colorless crystals, odor of acetic acid. mp: 256°, bp: decomp, d: 2.341.

SYNS:
BIS(ACETOXY)CADMIUM C.I. 77185
CADMIUM DIACETATE

TOXICITY DATA: 3	CODEN:
otr-ham:emb 1 umol/L	CNREA8 39,193,79
dnd-ham:emb 1 umol/L	CNREA8 39,193,79
ipr-mus LD50:14 mg/kg	TXAPA9 49,41,79
cyt-hmn:lym 10 nmol/L	MUREAV 85,236,81
ipr-rat TDLo:2371 ug/kg (14D preg)	BECTA6 20,206,78
ipr-rat TDLo:1 mg/kg (14D preg)	BECTA6 23,25,79
ipr-rat TDLo:2 mg/kg (20D preg)	BECTA6 23,25,79

Reported in EPA TSCA Inventory, 1980.
THR: MUT data. HIGH ipr. See also cadmium compounds.
Disaster Hazard: When heated to decomp it emits tox fumes of Cd.

CADMIUM BIS(2-ETHYLHEXYL) PHOSPHITE

CAS RN: 7495934 NIOSH #: TG 6475000
mf: $C_{32}H_{68}O_6P_2 \cdot Cd$; mw: 723.34

SYN: PHOSPHORUS ACID, BIS(2-ETHYLHEXYL) ESTER, CADMIUM SALT

TOXICITY DATA: 3	CODEN:
ipr-mus LDLo:250 mg/kg	CBCCT* 7,790,55

Occupational Exposure to Cadmium recm std: Air: TWA 40 ug/m3; CL 200 ug/m3/15M NTIS**.
THR: HIGH ipr. See also cadmium compounds.
Disaster Hazard: When heated to decomp it emits tox fumes of PO_x and Cd.

CADMIUM CAPRYLATE

CAS RN: 2191108 NIOSH #: RH 0370000
mf: $C_{16}H_{30}O_4 \cdot Cd$; mw: 398.86

SYN: OCTANOIC ACID, CADMIUM SALT (2:1)

TOXICITY DATA: 3-2	CODEN:
orl-rat LD50:950 mg/kg	JHEMA2 18,144,74
itr-rat LDLo:10 mg/kg	JHEMA2 18,144,74
orl-mus LD50:300 mg/kg	JHEMA2 18,144,74

Occupational Exposure to Cadmium recm std: Air: TWA 40 ug/m3; CL 200 ug/m3/15M NTIS**. Reported in EPA TSCA Inventory, 1980.

#: GB 2650000

comp ● 250° to
r sol.

NHYDRIDE

EN:
AC 41,57018,76.
m std. Air: TWA
M NTIS**.
pounds and chro-
nd mu mem: can
"chrome holes."

:
; tetrahydronaph-
als; ammonia; ar-
yric acid; n,n-di-
de, peroxyformic
yanoferrate; pyri-

H #: GB 2670000

DEN:
rrosive FEREAC
re to Cr(VI) recm
L 50 ug/m3/15M

o chromium com-

E

H #: GB 7280000

0
HCHROMIC CHLORIDE
X

DEN:
NX* NX #03305

980.
compounds.
comp it emits tox

H #: GB 2850000

SYNS:
CHROMIC ACID, CHROMIUM (3+) SALT (3:2) — CHROMIUM CHROMATE

TOXICITY DATA: 3 — CODEN:
smp-rat TDLo:112 mg/kg:NEO — AIHAAP 20,274,59

Carcinogenic Determination: Animal Positive IARC** 2,100,73. Occupational Exposure to Chromium(VI) recm std. Air: CL 1 ug(Cr(VI))/m3 NTIS**. Reported in EPA TSCA Inventory, 1980.
THR: An exper NEO, CARC. See also chromium compounds. Very powerful oxidizer.

CHROMITE (MINERAL)

CAS RN: 1308312 — NIOSH #: GB 4000000
mf: Cr_2FeO_4; mw: 223.85

SYNS:
CHROME ORE — IRON CHROMITE
CHROMITE ORE

TOXICITY DATA: 3 — CODEN:
Carcinogenic Determination: Indefinite IARC** 23,205,80.
THR: See also chromium compounds and iron. An exper ± CARC.

CHROMIUM

CAS RN: 7440473 — NIOSH #: GB 4200000
Af: Cr; Aw: 52.0

SYN: CHROME

TOXICITY DATA: — CODEN:
ivn-rat TDLo:2160 ug/kg/6W-I TFX:ETA — JNCIAM 16,447,55
smp-rat TDLo:1200 ug/kg/6W-I TFX:ETA — JNCIAM 16,447,55
smp-rat TDLo:75 mg/kg:ETA — ZEKBAJ 52,425,42

Carcinogenic Determination: Animal Suspected IARC** 2,100,73; Animal Indefinite IARC** 23,205,80. TLV TWA 500 ug/m3 DTLVS* 4,98,80. *Toxicology Review* 85CVA2 5,63,70; KOTTAM 11(11),1300,75; FO REAE 7,313,42; MIBUBI 9(4),321,75; FCTXA 9,105,71; PEXTAR 12,102,69; 85DHAX Cr,22,74 BNYMAM 54,413,78; NTIS** Conf-691001. OSH Standard: Air: TWA 1 mg/m3 (SCP-0) FEREA 39,23540,74. "NIOSH Manual of Analytical Methods VOL 1 152,182, VOL 3; S323,352, VOL 5 173 NIOSH Current Intelligence Bulletin 4, 1975. Reported in EPA TSCA Inventory, 1980. Proposed OSHA Medical Records Rules FEREAC 47,30420,82.
THR: An exper ETA, CARC.
Disaster Hazard: Powder will explode spont in air.
Incomp: Oxidants.
For further information see Vol. 3, No. 3 of *DPIM Re*

CHROMIUM ACETATE HYDRATE

CAS RN: 628524 — NIOSH #: AG 300
mf: $C_4H_9CrO_4 \cdot H_2O$; mw: 188.12

Red crystals.

SYNS:
ACETIC ACID, CHROMIUM(2+) SALT — CHROMIUM(II) ACETATE
CHROMIUM(2+) ACETATE — CHROMIUM DIACETATE
CHROMOUS ACETATE

TOXICITY DATA: 1 — CODEN:
orl-rat LD50:11260 mg/kg — AIHAAP 30,470,69

Reported in EPA TSCA Inventory, 1980.
THR: LOW orl. See also chromium compounds.
Disaster Hazard: When heated to decomp it emits acrid smoke and irr fumes.

CHROMIUM(III) CHLORIDE

CAS RN: 10025737 — NIOSH #: GB 5425000
mf: Cl_3Cr; mw: 158.36

Bp: 1300° (subl).

SYNS:
CHROMIC CHLORIDE — C.I. 77295
CHROMIUM CHLORIDE, ANHYDROUS — PURATRONIC CHROMIUM CHLORIDE
CHROMIUM CHLORIDE — TRICHLOROCHROMIUM
CHROMIUM TRICHLORIDE

MUTAGEN DATA: 3 — CODEN:
dnd-esc 5 mmol/L — CNREA8 40,2455,80
cyt-hmn:fbr 100 umol/L — CARYAB 32,379,79
cyt-hmn:ovr 50 ug/L — CARYAB 32,379,79

REPRODUCTIVE EFFECTS DATA:
im-rat TDLo:12668 ug/kg (1D male) — JRPFA4 7,21,64
ipr-mus TDLo:44600 ug/kg (8D preg) — JTSCDR 2,1,76
ipr-mus TDLo:30 mg/kg (8D preg) — JTSCDR 2,1,76
ipr-mus TDLo:59500 ug/kg (9D preg) — JTSCDR 2,1,76
scr-mus TDLo:450 mg/kg (1-17D preg) — TJADAB 12,198,75
scr-mus TDLo:12668 ug/kg (30D male) — JRPFA4 7,21,64

TOXICITY DATA: — CODEN:
orl-rat LD50:1870 mg/kg — AIHAAP 30,470,69
ipr-mus LD50:140 mg/kg — COREAF 256,1043,63
ivn-mus LDLo:400 mg/kg — AQMOAC #70-15,1970
ivn-rat LDLo:288 mg/kg — EQSSDX 1,1,75
ifa-gpig LDLo:202 mg/kg — AEHLAU 11,201,65
ipr-gpig LDLo:200 mg/kg — AEHLAU 11,201,65

Toxicology Review: 85DHAX Cr,22,74. Reported in EPA TSCA Inventory, 1980. Meets Criteria for Proposed OSHA Medical Records Rule FEREAC 47,30420,82.
THR: HIGH dermal; MOD orl. Violent reaction with Li, nitrogen.
Disaster Hazard: When heated to decomp it emits tox fumes of Cl^-.

CHROMIUM COMPOUNDS

Chromic acid and its salts have a corrosive action on the skin and mu mem. The lesions are confined to the exposed parts, affecting chiefly the skin of the hands and forearms and the mu mem of the nasal septum. The characteristic lesion is a deep, penetrating ulcer, which, for the most part, does not tend to suppurate, and which is slow in healing.

Small ulcers, about the size of a matchhead or end of a lead pencil may be found, chiefly around the base of the nails, on the knuckles, dorsum of the hands and forearms. These ulcers tend to be clean, and progress slowly. They are frequently painless, even though quite deep. They heal slowly, and leave scars. On the mu mem of the nasal septum the ulcers are usually accompanied by *purulent discharge and crusting. If exposure continues,* perforation of the nasal septum may result, but produces no deformity of the nose. Chromate salts are exper and hmn CARC of the lungs, nasal cavity and paranasal sinus, also exper CARC of the stomach and larynx. Hexavalent compounds are said to be more toxic than the trivalent. Eczematous dermatitis due to trivalent chromium compounds has been reported.

CHROMIUM DIACETATE

CAS RN: 628524 — NIOSH #: AG 3000000
mf: $C_4H_6CrO_4$; mw: 170.09

SYNS:
ACETIC ACID, CHROMIUM (2+) SALT (8Cl,9Cl) — CHROMIUM (2+) ACETATE
CHROMIUM ACETATE HYDRATE — CHROMIUM (II) ACETATE
CHROMOUS ACETATE

TOXICITY DATA: 1 — CODEN:
orl-rat LD50:11260 mg/kg — AIHAAP 30,470,69

THR: LOW orl. See also chromium compounds.
Disaster Hazard: Ignites spont in air.

CHROMIUM(VI) OXIDE (1:3)

CAS RN: 1333820 — NIOSH #: GB 6650000
mf: CrO_3; mw: 100.00

Red rhomb, deliq cryst.; d: 2.70; mp: 196°; bp: decomp sol = 61.7 g/100 cc ● 0°; 67.45 g/100 cc ● 100°.

SYNS:
ANHYDRIDE CHROMIQUE (FRENCH) — CHROMIUM TRIOXIDE
AMIDRIDE CROMICA (ITALIAN) — CHROMIUM (6+) TRIOXID
CHROME (TRIOXYDE DE) (FRENCH) — CHROMSÄUREANHYDRID (GERMAN)
CHROMIC ACID; CHROMIC (VI) ACID — CHROMTRIOXID (GERMAN)
CHROMIC ACID, SOLID; CHROMIC ACID, SOLID (DOT) — CHROOMTRIOXYDE (DUTCH)
CHROMIC ANHYDRIDE — CHROOMZUURANHYDRIDE (DUTCH)
CHROMIC ANHYDRIDE (DOT) — CHROMO (TRIOSSIDO DI) (ITALIAN)
CHROMIC TRIOXIDE; CHROMIC TRIOXIDE (DOT) — MONOCHROMIUM OXIDE
CHROMIUM OXIDE; CHROMIUM (VI) OXIDE — MONOCHROMIUM TRIOXIDE
PURATRONIC CHROMIUM TRIOXIDE

TOXICITY DATA: — CODEN:
mmo-sat 1 mmol/L — TOLED5 8,195,81
mma-sat 10 ug/plate — AEMIDF 33,805,77
dnd-esc 5 mmol/L — CNREA8 40,2455,80
mrc-hac 16 mmol/L — MUREAV 58,175,78
cyt-mus:mmal umol/L/48H — MUREAV 67,221,79
cyt-ham:emb 3500 ug/L/24H — MUREAV 46,87,77
cyt-ham:ovr 250 ug/L — TXCYAC 17,219,80
scr-ham:ovr 250 ug/L — TXCYAC 17,219,80
ivn-ham TDLo:5 mg/kg (8D preg) — ENVRAL 16,101,78
ivn-ham TDLo:7500 ug/kg (8D preg) — ENVRAL 16,101,78
ivn-ham TDLo:7500 ug/kg (8D preg) — TJADAB 9,417,74
ihl-ham TCLo:110 ug/m³:CAR — AGGHAR 13,528,55
smp-rat TDLo:125 mg/kg:CAR — AIHAAP 20,274,59
scu-dog LDLo 330 mg/kg — 2*ZWAY 3,3,1521

YL MERCAPTAN
XPTODODECANE
115

)DEN:
ARAZ 27,102,74

1980.

ccomp it emits tox

XANTHATE

H #: UU 5775000
)8

)2
AK ...,72
AK -,174,72

comp it emits very

T, CONDENSED
E OXIDE

H #: OF 5725000

LT OF SULFATED
LATE OF BROAD-CUT
ALCOHOL

)EN:
A5 22,411,71
A5 22,411,71
A5 22,411,71

omp it emits tox

)

#: OF 6097500

plant Lavanoula
distillation of the

EN:
AV 14,443,76
10.

np it emits acrid

#: OF 6097840

TOXICITY DATA: CODEN:
mma-sat 25 ug/plate TOLED5 3,325,79

THR: MUT data.
Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

LAVENDER ABSOLUTE

NIOSH #: OF 610000

Found in the flowers of Lavandula Officinalis chaix. The main constituent is Linalyl Acetate; prepared from alcoholic extract of a residue, which is extracted from plant material using an organic solvent; a dark green liquid.

TOXICITY DATA: 1 CODEN:
skn-rbt 500 mg/24H MLD FCTXAV 14,443,76
orl-rat LD50:4250 mg/kg FCTXAV 14(5),443,76

THR: LOW orl; A skn irr.
Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

LAVENDER OIL

CAS RN: 8000280 NIOSH #: OF 6110000

Main constituent is linalyl acetate. Found in the plant Lavandulaofficinalif choix (Fam. Labiate). Prepared by steam distillation of the flowering stalks of the plant.

SYNS:
LAVENDEL OEL (GERMAN) OIL OF LAVENDER

TOXICITY DATA: 1 CODEN:
skn-rbt 500 mg/24H MLD FCTXAV 14,443,76
orl-rat LD50:9040 mg/kg PHARAT 14,435,59

Reported in EPA TSCA Inventory, 1980.
THR: LOW orl. A skn irr.
Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

LD-813

CAS RN: 64083052 NIOSH #: OF 6730000

Commercial mixture of aromatic amines containing approx. 40% MOCA

TOXICITY DATA: 3 CODEN:
orl-rat TDLo:37 gm/kg/2Y-C:CARC TXAPA9 31,159,75

THR: An exper CARC. See also aromatic amines.
Disaster Hazard: When heated to decomp it emits toxic fumes of NO_x.

LEAD

CAS RN: 7439921 NIOSH #: OF 7525000
mf: Pb; mw: 207.19

Bluish-gray, soft metal. mp: 327.43°, bp: 1740°, d: 11.34 @ 20°/4°. vap. press: 1 mm @ 973°.

SYNS:
C.I. 77575
LEAD FLAKE
LEAD S2
OLOW (POLISH)

TOXICITY DATA: 3 CODEN:
TDLo:790 mg/kg (MGN) AEHLAU 23,102,71
TDLo:1140 mg/kg (14D pre-post) PHMCAA 20,201,78
TDLo:1120 mg/kg (MGN) AEHLAU 23,102,71
TDLo:6300 mg/kg (1-21D post) EXPEAM 31,1312,75
TDLo:12600 mg/kg (1-21D post) EXPEAM 31,1312,75
TDLo:4800 mg/kg (1-16D post) BECTA6 18,271,77
TDLo:50 mg/kg/(8D post):TER EXPEAM 25,56,69
TDLo:662 mg/kg (1-21W post) TXAPA9 25,466,73
TDLo:50 mg/kg/(8D post):TER EXPEAM 25,56,69
TDLo:450 mg/kg/6Y:CNS JAMAAP 237,2627,77
TDLo:1000 mg/kg EQSSDX 1,1,75
TDLo:160 mg/kg HBAMAK 4,1289,35

Carcinogenic Determination: Indefinite IARC** 23, 325,80.
AIR: 0.15 mg/m3 DTLVS* 4,243,80; *Toxicology Review:* TRBMAV 33(1),85,75; PGMJAO 51(601),783,75; JDSCAE 58(12),1767,75; IRXPAT 12,1,73; CTPHBG 55,147,71; CTOXAO 6(3),377,73; OURBAW 7(1),75,74; RREVAH 54,55,75; JAVMA4 164(3),277,74; AEMBAP 40,239,73; CTOXAO 5(2),151,72; FOREAE 7,313,42; KOTTAM 1(11),1300,75; GEIGAI 20(3),291,73; STEVA8 4(4),341,74; CLCHAU 19,361,73; AJMEAZ 38,409,65; 85DHAX PB,254,72; PDTNBH 6,204,77; AMTODM 1,209,77. OSHA Standard: Air: TWA 200 ug/m3 (SCP-O) FEREAC 39,23540,74. Occupational Exposure to Inorganic Lead recm std: Air: TWA 0.10 mg(Pb)/m3 NTIS**. "NIOSH Manual of Analytical Methods" VOL 1 102,191,195,200,208,214,262, VOL 3 S341. Reported in EPA TSCA Inventory, 1980.
THR: See lead compounds. A hmn CNS. HIGH orl; MOD irr. A common air contaminant. It is a ± CAR of the lungs and kidney and an exper TER.
Fire Hazard: Mod, in the form of dust when exposed to heat or flame. See also powdered metals.
Explosion Hazard: Mod, in the form of dust when exposed to heat or flame.
Incomp: NH_4NO_3, ClF_3, H_2O_2, NaN_3, Na_2C_2, Zr. disodium acetylide; oxidants.
Disaster Hazard: Dangerous; when heated, emits highly toxic fumes; can react vigorously with oxidizing materials.
For further information see Vol. 1, No. 1 of *DPIM Report.*

LEAD ACETATE

CAS RN: 301042 NIOSH #: AI 5250000
mf: $C_4H_6O_4 \cdot Pb$; mw: 325.29

Trihydrate, colorless crystals or white granules or powder. Slightly acetic odor; slowly effloresces; d: 2.55; mp: 75° when rapidly heated. Decomp above 200°; very sol in glycerol. Keep well closed.

SYNS:
ACETIC ACID LEAD (2+) SALT
ACETATE DE PLOMB (FRENCH)
BLEIACETAT (GERMAN)
LEAD (2+) ACETATE
LEAD(II) ACETATE
LEAD DIACETATE
LEAD DIBASIC ACETATE
NORMAL LEAD ACETATE
PLUMBOUS ACETATE
SALT OF SATURN
SUGAR OF LEAD

TOXICITY DATA: 3 CODEN:
dns-rat-ipr 50 ug/kg PSEBAA 143,446,73
spm-mus-par 1 gm/kg ARTODN 46,159,80
orl-rat TDLo:7854 mg/kg (6-16D preg) FCTXAV 13,629,75
orl-rat TDLo:1800 mg/kg (1-22D preg/14D post) TOLED5 7,373,80
orl-rat TDLo:113 gm/kg (70D pre-21D post) PBBHAU 8,347,78
orl-mus TDLo:3150 mg/kg (1-21D preg) CRSBAW 170,1319,76
orl-mus TDLo:4800 mg/kg (1-8D preg) CRSBAW 172,1037,78
orl-mus TDLo:9 gm/kg (7-21D preg) CRSBAW 170,1319,76
ipr-mus TDLo:35 mg/kg (8D preg) BIMDB3 30,223,79
ivn-ham TDLo:50 mg/kg/(8D preg):TER EXMPA6 7,208,67
ivn-ham TDLo:50 mg/kg (8D preg) EXPEAM 25,56,69
ipr-pgn LDLo:150 mg/kg ARTODN 46,265,80
cyt-hmn:lym 1 mmol/L/24H TXCYAC 10,67,78
cyt-mus-orl 16800 mg/kg/4W JTEHD6 2,619,77
cyt-mky-orl 5760 mg/kg/64W MUREAV 45,77,77
ipr-mus TDLo:15 mg/kg/(8D preg):TER BIMDB3 30,223,79
ivn-ham TDLo:50 mg/kg/(8D preg):TER EXMPA6 7,208,67
orl-rat TDLo:250 gm/kg/47W-C:ETA BJCAAI 16,283,62
ipr-rat LDLo:204 mg/kg JPETAB 38,161,30
ipr-mus LD50:120 mg/kg COREAF 256,1043,63
orl-dog LDLo:300 mg/kg HBAMAK 4,1289,35
scu-dog LDLo:80 mg/kg HBAMAK 4,1289,35
ivn-dog LDLo:300 mg/kg EQSSDX 1,1,75
scu-cat LDLo:100 mg/kg HBAMAK 4,1289,35
scu-rbt LDLo:300 mg/kg HBAMAK 4,1289,35
ivn-rbt LDLo:50 mg/kg EQSSDX 1,1,75
scu-frg LDLo:1600 mg/kg HBAMAK 4,1289,35

Carcinogenic Determination: Animal Positive IARC** 23,325,80; Human Suspected IARC** 23,325,80. *Toxicology Review:* ADTEAS 5,51,72; ENVRAL 13,36,77; 85DHAX Pb,256,72. OSHA Standard: Air: TWA 200 ug(Pb)/m3 (SCP-O) FEREAC 29,23540,74. Occupational Exposure to Inorganic Lead recm std: Air: TWA 0.10 mg(Pb)/m3 NTIS**. Reported in EPA TSCA Inventory, 1980.
THR: MUT data. An exper + CARC, TER, ETA. A susp hmn CARC; HIGH ipr, orl, scu, ivn. See also lead compounds. A poison. An insecticide.
Disaster Hazard: When heated to decomp it emits toxic fumes of Pb.
Incomp: $KBrO_3$; acids, sol sulfates, citrates, tartrates, chlorides, carbonates, alkalies, tannin phosphates, resorcinol, salicylic acid, phenol, chloral hydrate, sulfites, vegetable infusions, tinctures.
For further information see Vol. 1, No. 4 of *DPIM Report.*

LEAD ACETATE, BASIC

CAS RN: 1335326 NIOSH #: OF 8750000
mf: $C_4H_{10}O_8Pb_3$; mw: 807.71

SYNS:
CYANSAN SAN-CYAN

TOXICITY DATA: 3 CODEN:
orl-hmn TDLo:5400 mg/kg/24W:EYE AROPAW 94,927,76
ims-rat LD50:310 mg/kg BJPCAL 1,186,46
orl-mus LDLo:4 mg/kg APFRAD 19,740,61

Reported in EPA TSCA Inventory, 1980.

THR: Toxic to eye in hmn via orl. HIGH ims, orl. See also cyanates.

Disaster Hazard: When heated to decomp it emits very tox fumes of CN^- and Na_2O.

CYANIDE

CAS RN: 57125 NIOSH #: GS 7175000
mf: CN^-; mw: 26.02

SYN: CYANURE (FRENCH)

TOXICITY DATA: 3 CODEN:
ipr-mus LD50:3 mg/kg NATUAS 228,1315,70

TLV: Air: 5 mg/m3 DTLVS* 4,109,80. *Toxicology Review:* CLCHAU 19,361,73. "NIOSH Manual of Analytical Methods" VOL 1 116, VOL 3 S250. Reported in EPA TSCA Inventory, 1980.

THR: Cyanide directly stimulates the chemoreceptors of the carotid and aortic bodies with a resultant hyperpnea. Cardiac irregularities are often noted, but the heart invariably outlasts the respirations. Death is due to respiratory arrest of central origin. It can occur within seconds or minutes of the inhalation of high concentrations of hydrogen cyanide gas. Because of slower absorption, death may be more delayed after the ingestion of cyanide salts, but the critical events still occur within the first hour.

Two other sources of cyanide have been responsible for human poisoning. One of these is amygdalin, a cyanogenic glycoside found in apricot, peach, and similar fruit pits and in sweet almonds. Amygdalin is a chemical combination of glucose, benzaldehyde, and cyanide from which the latter can be released by the action of β-glucosidase or emulsin. Although these enzymes are not found in mammalian tissues, the human intestinal microflora appears to possess these or similar enzymes capable of effecting cyanide release resulting in human poisoning. For this reason amygdalin may be as much as 40 times more toxic by the oral route as compared with intravenous injection. Amygdalin is the major ingredient of Laetrile, and this alleged anticancer drug has also been responsible for human cyanide poisoning. An ethical drug that may also cause cyanide poisoning in overdose is the potent vascular smooth muscle relaxant sodium nitroprusside. Although nitroprusside is related chemically to ferricyanide, unlike the latter it penetrates into erythrocytes and reacts with hemoglobin to release its cyanide (Smith and Kruszyna, 1974). Fortunately, the therapeutic margin for nitroprusside appears to be quite large.

Cyanide is commonly found in certain rat and pest poisons, silver and metal polishes, photographic solutions, and fumigating products. Compounds such as potassium cyanide can also be readily purchased from chemical stores. Cyanide is readily absorbed from all routes, including the skin, mu mem, and by inhal, although alkali salts of cyanide are toxic only when ingested. Death may occur with ingestion of even small amounts of sodium or potassium cyanide and can occur within minutes or hours depending on route of exposure. Inhalation of toxic fumes represents a potentially rapidly fatal type of exposure. Sodium nitroprusside (Smith and Kruszyna, 1974) and apricot seeds (Sayre and Kaymakcalan, 1964) have also caused cyanide poisoning. A blood cyanide level of greater than 0.2 μg/ml is considered toxic. Lethal cases have usually had levels above 1 μg/ml. Clinically, cyanide poisoning is reported to produce a bitter, almond odor on the breath of the patient; however, only a small proportion of the population is genetically able to discern this characteristic odor. Typically, cyanide has a bitter, burning taste, and following poisoning, symptoms of salivation, nausea without vomiting, anxiety, confusion, vertigo, giddiness, lower jaw stiffness, convulsions, opisthotonos, paralysis, coma, cardiac arrhythmias, and transient respiratory stimulation followed by respiratory failure may occur. Bradycardia is a common finding, but in most cases heartbeat usually outlasts respiration (Wexler et al., 1947). A prolonged expiratory phase is considered to be characteristic of cyanide poisoning.* The volatile cyanides resemble hydrocyanic acid physiologically, inhibiting tissue oxidation and causing death through asphyxia. Cyanogen is probably as toxic as hydrocyanic acid; the nitriles are generally considered somewhat less toxic, probably because of their lower volatility. The non-volatile cyanide salts appear to be relatively non-toxic systemically, so long as they are not ingested and care is taken to prevent the formation of hydrocyanic acid. Workers, such as electroplaters and picklers, who are daily exposed to cyanide solutions may develop a "cyanide" rash, characterized by itching, and by macular, papular, and vesicular eruptions. Frequently there is secondary infection. Exposure to small amounts of cyanide compounds over long periods of time is reported to cause loss of appetite, headache, weakness, nausea, dizziness, and symptoms of irr of the upper respiratory tract and eyes. See also specific compounds.

Fire Hazard: Mod, by chemical reaction with heat, moisture, acid. Many cyanides evolve hydrocyanic acid rather easily. This is a flam gas and is highly toxic. Carbon dioxide from the air is sufficiently acidic to liberate hydrocyanic acid from cyanide solutions. See also hydrocyanic acid.

Explosion Hazard: See hydrocyanic acid. Explodes if melted with nitrite or chlorate @ about 450°. Violent reaction with F_2, Mg, nitrates, HNO_3, nitrites.

Disaster Hazard: Dangerous; on contact with acid, acid

* Casarett and Doull's, "Toxicology, the basic Science of Poisons" 2nd ed. Doull, Klaassen and Amdur (eds). Macmillan Pub. Co. Inc. New York, N.Y.

REFERENCES

REFERENCES

1. Site Inspection Log Book ALD000652693 Reynolds Metals Company, Alabama Reclamation 1985 (interview, observations, measurements and estimates, site plans and analytical data of sampling, etc.).

2. ADEM Land, Water and Air Divisions, file correspondence, and staff communications.

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4. Hazardous and Toxic Effects of Industrial Chemicals, Sittig, 1979.

5. AWIC/ADEM compliance monitoring analyses.

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7 Environmental Data Inventory, State of Alabama, Mobile District, U.S. Army Corps of Engineers, 1981.

8. ADEM Public Water Supply Data and Well Logs for Lee County.

9. Alabama County Data Book, 1983.

10. Alabama Geology Survey - Groundwater levels in Alabama, various years.

11. Alabama Director of Mining and Manufacturing, 1982-1983.

12. Climatological Survey for Forty Potential Hazardous Waste Sites in Alabama, prepared by Office of State Climatologist, Jan. 1985.

13. Dangerous Properties of Industrial Materials, Sixth Edition, North Irving Sax, 1984.

14. The Merck Index, Ninth Edition, Merck & Company, Inc., 1976.

15. ADEM Water Division files for Union Carbide.

ENVIRONMENTAL PROTECTION SYSTEMS, INC.

Alabama RCRA 3012 Site Ranking Scheme
EPS Form 3012-V

Site Name ALABAMA RECLAMATION
Site Number ALD000652693

Site Inspection Ranking Scheme

(Select one answer for each of the following seven questions)

1. Are Hazardous Substances Present?		
A. Confirmed on site!	10 points	
B. Suspected at site!	5 points	X
C. It is unknown!	2 points	
D. No hazardous substances	0 points	
E. RCRA facility only!	0 points	
2. Is There a Pollution Dispersal Pathway?		
A. Direct to surface and/or groundwater.	5 points	
B. Indirect to surface and/or groundwater.	4 points	
C. Suspected to surface and/or groundwater.	3 points	X
D. Not known for sure.	2 points	
E. No pathway.	0 points	
3. Characteristics of Human Population?		
A. High density.	5 points	
B. Medium density.	4 points	
C. Low density.	3 points	X
D. No population.	2 points	
4. Characteristics of Natural Environment?		
A. Critical habitat including endangered species, etc.	5 points	
B. Sensitive habitat.	3 points	
C. Common less sensitive habitat.	2 points	X
5. How is Human Population Affected By Site?		
A. Public utility of drinking water from site.	5 points	
B. Direct public access to site.	4 points	
C. Public access to affected surface water.	3 points	X
D. Only potential for human population contact.	2 points	
E. Low or no potential for contact.	1 point	
6. Facility Management Practices at Site?		
A. Site actively supervised and managed currently with monitoring reports and other permit and report requirements.	1 point	X
B. Site inadequately managed records not up-to-date.	3 points	

C. Site not currently managed or regulated.	4 points	
D. Abandon site.	5 points	

7. Potential Responsible Parties for Site Operations?

A. Controlling party identified and accepts responsibility for site.	1 point	X
B. Suspected controlling party identified but does not accept responsibility for site.	4 points	
C. No responsible party available.	5 points	

Ranking Score =

$$\frac{5}{\#1} \times \left[\frac{3}{\#2} + \frac{2}{\#4} + \left(\frac{3}{\#3} \times \frac{3}{\#5} \right) + \frac{1}{\#6} + \frac{1}{\#7} \right]$$

TABLE 1. Ranking Assessment

NUMERICAL RANGE	PRIORITY ASSESSMENT
0-50	NONE
50-150	LOW
150-300	MEDIUM
300-450	HIGH

Ranking Score: 80

Priority Assessment: LOW

ENVIRONMENTAL PROTECTION SYSTEMS, INC.
RCRA 3012
SITE SAFETY PLAN

A. GENERAL INFORMATION

SITE: **Reynolds Metals Co. - River Road Plant** EPA NO.: ALD000652693

LOCATION: River Road, Muscle Shoals, AL

PLAN PREPARED BY: L. W. Warren DATE: 11/19/84
APPROVED BY: E. Corbin McGriff DATE: 11/26/84
E. Corbin McGriff, Jr., Ph.D., P.E.

OBJECTIVE(S): To collect environmental samples and waste samples on and around site to characterize any hazardous materials present.

PROPOSED DATE OF INVESTIGATION: December 1984

BACKGROUND REVIEW: Complete: X Preliminary: ___

DOCUMENTATION/SUMMARY: OVERALL HAZARD: Serious: ___ Moderate: ___
Low: X Unknown: ___

B. SITE/WASTE CHARACTERISTICS

Need sludge throughout report!

WASTE TYPE(S): Liquid: ___ Solid: X Sludge: ___ Gas: ___

CHARACTERISTICS: Corrosive: ___ Ignitable: ___ Radioactive: ___ Volatile:
Toxic: X Reactive: ___ Unknown: ___
Other (Name): ___

FACILITY DESCRIPTION: Facility was involved in manufacture of ferromanganese alloys.

Principal Disposal Method (type and location): Three disposal areas reported at the site.

Unusual Features (dike integrity, power lines, terrain, etc.):

Status: (active, inactive, unknown) Inactive

History: (Worker or non-worker injury; complaints from public: previous agency action):

C. HAZARD EVALUATION

Hazard evaluation is low. Ferromanganese emission control dust sludge disposed in three areas on site. Cyanide used at one time at faciltiy. Records indicate cyanide destruction techniques used since operations began.

D. SITE SAFETY WORK PLAN

PERIMETER ESTABLISHMENT: Map/Sketch Attached X Site Secured? ___

Perimeter Identified? ___ Zone(s) of Contamination Identified? ___

PERSONAL PROTECTION

Level of Protection A ___ B ___ C ___ D X

Modifications:

Surveillance Equipment and Materials: Boring device, hard hats, gloves, boots.

DECONTAMINATION PROCEDURES: Dispose of contaminated boots and gloves.

Special Equipment, Facilities, or Procedures:

SITE ENTRY PROCEDURES: Permission of owner/operator should be obtained before entry.

Team Member	Responsibility

WORK LIMITATIONS (Time of day, etc.): Daylight hours

INVESTIGATION-DERIVED MATERIAL DISPOSAL: Samples will be sent to the laboratory for analysis. Samples will then be disposed of by the laboratory.

E. EMERGENCY INFORMATION

LOCAL RESOURCES

Ambulance: 386-4000 or 766-8600
Hospital or Emergency Room: 383-7441 Humana Hospital Shoals
Poison Control Center: 1-800-462-0800
Police: 383-1771
Fire Department: 383-1512
Airport:
Explosives Unit:
EPA Contact: Ms. Camilla Warren, Region IV 404/881-2234

SITE RESOURCES

Water Supply:
Telephone:
Radio:
Other:

EMERGENCY CONTACTS

Mr. Dan Cooper, (ADEM) 205/271-7732
EPA Emergency Spill Center 404/881-4062

F. EMERGENCY ROUTES

(Give road or other directions; attach map)

Hospital:

Other:

ENVIRONMENTAL PROTECTION SYSTEMS, INC.

RCRA 3012
SITE SCREENING STUDY FORM

EPS Project Manager: W. Warren Date: 11/19/84

SITE INFORMATION

EPA I.D. No: ALD000652693

Site Name: Reynolds Metals - River Road Plant Street: River Road

City: Muscle Shoals County: Colbert State: Alabama

Site Owner: Reynolds Metals Co.

Site Manager: Mr. Charles Bent Phone No: 804/281-2918

Address: 6601 West Broad Street, Richmond VA 23261

Purpose of Study: To collect environmental and waste samples on and around the site to determine and characterize any hazardous materials present.

Site Sketch Attached: X Yes ___ No

SITE BACKGROUND

Site Description (including Waste Types and Dispositions):

Reynolds Metals Company purchased the River Road facility from Union Carbide in 1980. The facility was involved in manufacturing ferromanganese alloys. Emission control dust was placed in three area landfills. Facility also used cyanide at one time. Records did indicate that cyanide destruction was in use since that operation began.

METHODOLOGY

All sample collection, sample preservation and chain-of-custody procedures used during this investigation will be in accordance with the standard operating procedures as specified in the Quality Control/Quality Assurance Plan for the Analytical and Environmental Division of Environmental Protection Systems, Inc., revised August 31, 1984. All laboratory analyses and quality assurance procedures used during this investigation will be in accordance with standard procedures and protocols as specified in the Quality Control/Quality Assurance Plan for the Analytical and Environmental Division of Environmental Protection Systems, Inc., revised August 31, 1984, or as specified by the existing United States Environmental Protection Agency standard procedures and protocols for the contract analytical laboratory program.

SAMPLING REQUIREMENTS

No. Water Samples: ___ No. Soil/Sediment Samples: 7
No. Sludge Samples: ___ Other: ___

Split Samples Requested?: ___ Yes ___ No ___ Unknown

If yes, reason: ___

Sample Information: Duplicate Samples: One Per Site

Station	Type	Organics Acid	Organics B/N	Organics Pest	Metals Total	Metals EPT	VOA	Other
RE-S01-LA	Soil/Comp.				X			CN
RE-S02-LA	Soil/Comp.				X			CN
RE-S03-LA	Soil/Comp.				X			CN
RE-S04-LA	Soil/Comp.				X			CN
RE-S05-LA	Soil/Comp.				X			CN
RE-S06-LA	Soil/Comp.				X			CN
RE-S07-AS	Soil/Comp.				X			CN

TOTALS:

Water ___
Soil 7
Sediment ___
Sludge ___
Other ___

LABORATORY RESOURCE REQUIREMENTS

Anticipated Date(s) of Sample Delivery: December 1984

Analytical Needs:

Analysis	Water Samples	Soil Samples	Totals
Organics			
Acid Extractables:			
Base/Neutrals:			
Pesticides:			
Organics (Other:):			
Total Metals (Specified: Pb, Cd, Cr):		7	7
EP Toxic Metals (Specified:):			
VOA:			
Other: Cyanide		7	7

PERSONNEL REQUIREMENTS

Field Personnel:

REGULATORY COORDINATION

EPA Project Officer: Joel Veater Phone No. 404/881-2234

Location: Atlanta, Georgia

Local Agency Contact: Steve Maurer Phone No. 205/271-7728

Location: Montgomery, Alabama

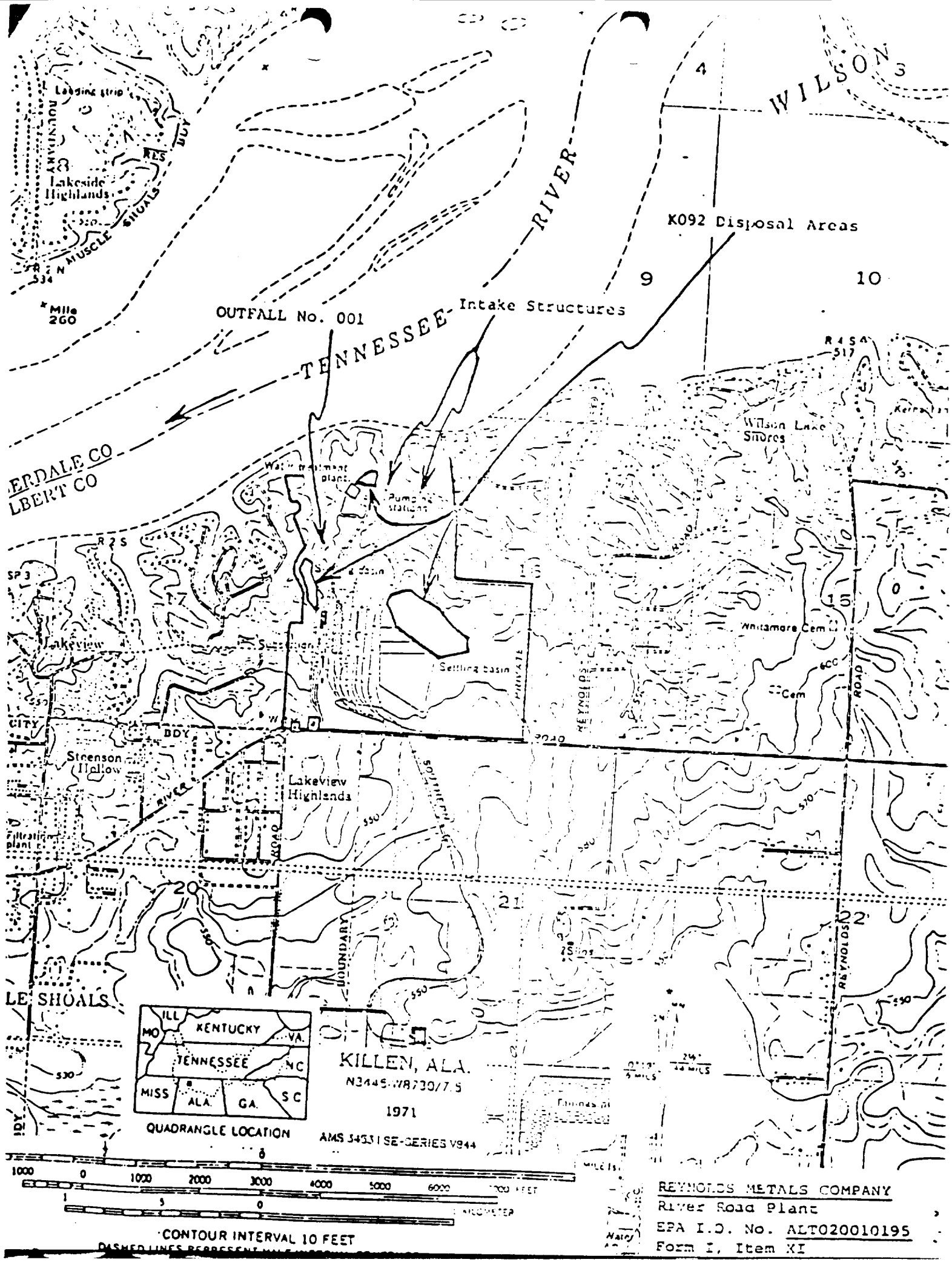
PROJECT SCHEDULE

Site Screening Study Form Transmittal Date:

Field Study Date:

Anticipated Data Receipt Date:

Station Number	Remarks
RE-S01-LA	Soil Boring from ~~2.6~~ 1.5 acre ~~landfill~~ disposal area.
RE-S02-LA	Soil Boring from ~~2.6~~ 1.5 acre ~~landfill~~. "
RE-S03-~~LA~~ SB	Soil Boring from 13.5 acre ~~landfill~~. "
RE-S04-~~LA~~ SB	Soil Boring from 13.5 acre ~~landfill~~. "
RE-S05-LA	Soil Boring from ~~2.5~~ 2.6 acre ~~landfill.~~ "
RE-S06-LA	Soil Boring from ~~2.8~~ 2.6 acre ~~landfill~~. " Background sample.
RE-S07-AS	Background Sample
RE-S08-LA	FIELD REPLICATE OF RE-S03-SB



REYNOLDS METALS COMPANY
River Road Plant
EPA I.D. No. ALT020010195
Form I, Item XI

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 1 - SITE LOCATION AND INSPECTION INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
AL	D000652693

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER
Wrong REYNOLDS METALS Co.-ALABAMA RECLAMATION	RIVER ROAD

03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG DIST
MUSCLE SHOALS	AL	35660	COLBERT	033	05

09 COORDINATES: LATITUDE 34 47 37. LONGITUDE 087 36 00.

10 TYPE OF OWNERSHIP (Check one): ☒ A PRIVATE ☐ B FEDERAL ☐ C STATE ☐ D COUNTY ☐ E MUNICIPAL ☐ F OTHER ☐ G UNKNOWN

III. INSPECTION INFORMATION

01 DATE OF INSPECTION	02 SITE STATUS	03 YEARS OF OPERATION
1 15 85 (MONTH DAY YEAR)	☒ ACTIVE ☐ INACTIVE	Landfill of Plant? 1940 (BEGINNING YEAR) ____ (ENDING YEAR) ____ UNKNOWN

04 AGENCY PERFORMING INSPECTION (Check all that apply)

☐ A EPA ☐ B EPA CONTRACTOR ____ (Name of firm) ☐ C MUNICIPAL ☐ D MUNICIPAL CONTRACTOR ____ (Name of firm)

☐ E STATE ☒ F STATE CONTRACTOR EPS, INC. (Name of firm) ☐ G OTHER ____ (Specify)

05 CHIEF INSPECTOR	06 TITLE	07 ORGANIZATION	08 TELEPHONE NO
DONALEA DINSMORE	ENVIRONMENTAL CHEMIST	EPS	(601) 922-8242

09 OTHER INSPECTORS	10 TITLE	11 ORGANIZATION	12 TELEPHONE NO
THOMAS McALPIN	FIELD SUPPORT STAFF	EPS	(904) 944-0301
			( )
			( )
			( )
			( )

13 SITE REPRESENTATIVES INTERVIEWED	14 TITLE	15 ADDRESS	16 TELEPHONE NO
EARL McGUIRE	PLANT ENGINEER	Wrong ALABAMA RECLAMATION	(205) 386-8316
			( )
			( )
			( )
			( )
			( )

17 ACCESS GAINED BY (Check one)	18 TIME OF INSPECTION	19 WEATHER CONDITIONS
☒ PERMISSION ☐ WARRANT	8 45 A.M.	SLIGHTLY WINDY, COLD 22°F - 38°F WINDCHILL -2°F

IV. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NO
STEVE MAURER Sam	ADEM	(205) 271-7728

04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NO.	08 DATE
DONALEA DINSMORE		EPS	(601)-922-8242	3 27 85 (MONTH DAY YEAR)

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
AL	D000652693

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

- [X] A SOLID
- [ ] B POWDER, FINES
- [ ] C SLUDGE
- [ ] D OTHER _____ (Specify)
- [ ] E SLURRY
- [ ] F LIQUID
- [ ] G GAS

02 WASTE QUANTITY AT SITE (Measures of waste quantities must be independent)

TONS _____

CUBIC YARDS UNKNOWN

NO. OF DRUMS _____

03 WASTE CHARACTERISTICS (Check all that apply)

- [ ] A TOXIC
- [ ] B CORROSIVE
- [ ] C RADIOACTIVE
- [ ] D PERSISTENT
- [ ] E SOLUBLE
- [ ] F INFECTIOUS
- [ ] G FLAMMABLE
- [ ] H IGNITABLE
- [ ] I HIGHLY VOLATILE
- [ ] J EXPLOSIVE
- [ ] K REACTIVE
- [ ] L INCOMPATIBLE
- [ ] M NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE	18	ACRES	HIGH TOTAL LEAD, NOT LEACHABLE
OLW	OILY WASTE			
SOL	SOLVENTS			
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS			

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
SLU	PROCESS SLUDGE (WITH LEAD)	999	SI	500-2200 (or 2250? or 2000?)	MG/KG

V. FEEDSTOCKS (See Appendix for CAS Numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g. state files, sample analysis, reports)

PRELIMINARY ASSESSMENT
RCRA 3012 SITE INVESTIGATION

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
AL	D0006 52693

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☐ A. GROUNDWATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED _____
02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ B. SURFACE WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED _____
02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ C. CONTAMINATION OF AIR
03 POPULATION POTENTIALLY AFFECTED _____
02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS
03 POPULATION POTENTIALLY AFFECTED _____
02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ E. DIRECT CONTACT
03 POPULATION POTENTIALLY AFFECTED _____
02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☒ F. CONTAMINATION OF SOIL
03 AREA POTENTIALLY AFFECTED 18 (Acres)
02 ☒ OBSERVED (DATE 1/15/85) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
SLUDGE CONTAINS 500-2000 ppm TOTAL LEAD AND WAS PLACED IN SURFACE IMPOUNDMENTS - AREA NOW DRY WITH DIRECT SOIL CONTACT

01 ☐ G. DRINKING WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ H. WORKER EXPOSURE/INJURY
03 WORKERS POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ I. POPULATION EXPOSURE/INJURY
03 POPULATION POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
AL	D006152693

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☐ J. DAMAGE TO FLORA — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ K. DAMAGE TO FAUNA — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION (Include names of species)

01 ☐ L. CONTAMINATION OF FOOD CHAIN — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ M. UNSTABLE CONTAINMENT OF WASTES (Spills, Runoff, Standing liquids, Leaking drums) — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ — 04 NARRATIVE DESCRIPTION

01 ☐ N. DAMAGE TO OFFSITE PROPERTY — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: _____

IV. COMMENTS

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION
PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
AL	D 000652693

II. PERMIT INFORMATION

01 TYPE OF PERMIT ISSUED (Check all that apply)	02 PERMIT NUMBER	03 DATE ISSUED	04 EXPIRATION DATE	05 COMMENTS
☐ A NPDES				INACTIVE
☐ B UIC				
☐ C AIR				INACTIVE
☐ D RCRA				
☒ E RCRA INTERIM STATUS	ALD000652693	11/80		WITHDRAWN
☐ F SPCC PLAN				
☐ G STATE (Specify)				
☐ H LOCAL (Specify)				
☐ I OTHER (Specify)				
☐ J NONE				

III. SITE DESCRIPTION

01 STORAGE/DISPOSAL (Check all that apply)	02 AMOUNT	03 UNIT OF MEASURE
☒ A SURFACE IMPOUNDMENT	18	ACRES
☐ B PILES		
☐ C DRUMS, ABOVE GROUND		
☐ D TANK, ABOVE GROUND		
☐ E TANK, BELOW GROUND		
☐ F LANDFILL		
☐ G LANDFARM		
☐ H OPEN DUMP		
☐ I OTHER (Specify)		

04 TREATMENT (Check all that apply)
- ☐ A INCENERATION
- ☐ B UNDERGROUND INJECTION
- ☐ C CHEMICAL/PHYSICAL
- ☐ D BIOLOGICAL
- ☐ E WASTE OIL PROCESSING
- ☐ F SOLVENT RECOVERY
- ☐ G OTHER RECYCLING/RECOVERY
- ☐ H OTHER (Specify)

05 OTHER
- ☒ A BUILDINGS ON SITE

06 AREA OF SITE: > 50 (Acres)

07 COMMENTS
SURFACE IMPOUNDMENTS NOW DRY - SOME COVERED WITH KUDZU AND OTHER VEGETATION

IV. CONTAINMENT

01 CONTAINMENT OF WASTES (Check one)
☐ A ADEQUATE, SECURE ☐ B MODERATE ☐ C INADEQUATE, POOR ☐ D INSECURE, UNSOUND, DANGEROUS

02 DESCRIPTION OF DRUMS, DIKING, LINERS, BARRIERS, ETC
FORMER SURFACE IMPOUNDMENT HAD DIKING AND WASTE MATERIAL WELL CONTAINED WITHIN INDIVIDUAL AREAS. DIKES PRESENTLY OVERGROWN WITH VEGETATION

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE ☒ YES ☐ NO
02 COMMENTS
SOME RESTRICTED ACCESS DUE TO VEGETATION

VI. SOURCES OF INFORMATION (Cite specific references, e.g. state files, sample analysis, reports)
RCRA PART A APPLICATION
SITE INVESTIGATION

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
AL	D000652693

II. DRINKING WATER SUPPLY

01 TYPE OF DRINKING SUPPLY (Check as applicable)

	SURFACE	WELL
COMMUNITY	A ☒	B ☐
NON-COMMUNITY	C ☐	D ☐

02 STATUS

ENDANGERED	AFFECTED	MONITORED
A ☐	B ☐	C ☒
D ☐	E ☐	F ☐

03 DISTANCE TO SITE

A 3.0 (mi)

B _____ (mi)

III. GROUNDWATER

01 GROUNDWATER USE IN VICINITY (Check one)

☐ A ONLY SOURCE FOR DRINKING ☐ B DRINKING (Other sources available) COMMERCIAL, INDUSTRIAL, IRRIGATION (No other water sources available) ☒ C COMMERCIAL, INDUSTRIAL IRRIGATION (Limited other sources available) ☐ D NOT USED, UNUSEABLE

02 POPULATION SERVED BY GROUND WATER UNKNOWN

03 DISTANCE TO NEAREST DRINKING WATER WELL UNKNOWN (mi)

04 DEPTH TO GROUNDWATER	05 DIRECTION OF GROUNDWATER FLOW	06 DEPTH TO AQUIFER OF CONCERN	07 POTENTIAL YIELD OF AQUIFER	08 SOLE SOURCE AQUIFER
150-200 (ft)	GEN. NORTH TO RIVER	150-200 (ft)	700,000 (gpd)	☐ YES ☒ NO

09 DESCRIPTION OF WELLS (including usage, depth, and location relative to population and buildings)

NO WELL LOGS AVAILABLE - SOME SPRINGS REPORTED SOUTHWEST OF FACILITY

10 RECHARGE AREA ☐ YES ☐ NO COMMENTS GENERAL AQUIFER MAPS INDICATE SITE IN POTENTIAL RECHARGE OF TUSCUMBIA LIMESTONE AQUIFERS

11 DISCHARGE AREA ☐ YES ☐ NO COMMENTS NUMEROUS SPRINGS IN COUNTY AS WELL AS TENNESSEE RIVER

IV. SURFACE WATER

01 SURFACE WATER USE (Check one)

☒ A RESERVOIR, RECREATION DRINKING WATER SOURCE ☐ B IRRIGATION, ECONOMICALLY IMPORTANT RESOURCES ☐ C COMMERCIAL, INDUSTRIAL ☐ D NOT CURRENTLY USED

02 AFFECTED/POTENTIALLY AFFECTED BODIES OF WATER

NAME	AFFECTED	DISTANCE TO SITE
TENNESSEE RIVER	☐	0.05 (mi)
	☐	(mi)
	☐	(mi)

V. DEMOGRAPHIC AND PROPERTY INFORMATION

01 TOTAL POPULATION WITHIN

ONE (1) MILE OF SITE	TWO (2) MILES OF SITE	THREE (3) MILES OF SITE
A 50 (EST) NO. OF PERSONS	B 300 (EST) NO. OF PERSONS	C _____ NO. OF PERSONS

02 DISTANCE TO NEAREST POPULATION 0.2 (mi)

03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE _____

04 DISTANCE TO NEAREST OFF-SITE BUILDING 0.2 (mi)

05 POPULATION WITHIN VICINITY OF SITE (Provide narrative description of nature of population within vicinity of site, e.g. rural village, densely populated urban area)

RESIDENTIAL AREAS ARE LOCATED ALONG THE TENNESSEE RIVER BACKWATERS BOTH TO THE EAST AND WEST OF THE FACILITY. ANOTHER SUB-DIVISION IS LOCATED TO SOUTHWEST OF SITE. TO SOUTH AND EAST AREAS ARE EITHER ~~UNDEVELOPED~~ UNDEVELOPED OR INDUSTRIAL. MAJOR POPULATION AREAS LOCATED TO WEST OF SITE IN MUSCLE SHOALS - TRI CITIES AREA.

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
AL	D000652693

VI. ENVIRONMENTAL INFORMATION

01 PERMEABILITY OF UNSATURATED ZONE (Check one)

☐ A. $10^{-6} - 10^{-8}$ cm/sec ☒ B. $10^{-4} - 10^{-6}$ cm/sec ☐ C. $10^{-4} - 10^{-3}$ cm/sec ☐ D. GREATER THAN 10^{-3} cm/sec

02 PERMEABILITY OF BEDROCK (Check one)

☐ A. IMPERMEABLE (Less than 10^{-6} cm/sec) ☒ B. RELATIVELY IMPERMEABLE ($10^{-4} - 10^{-6}$ cm/sec) ☐ C. RELATIVELY PERMEABLE ($10^{-2} - 10^{-4}$ cm/sec) ☐ D. VERY PERMEABLE (Greater than 10^{-2} cm/sec)

03 DEPTH TO BEDROCK	04 DEPTH OF CONTAMINATED SOIL ZONE	05 SOIL pH
UNKNOWN (ft)	EST 8 - 12 (ft)	4.5 - 5.5

06 NET PRECIPITATION	07 ONE YEAR 24 HOUR RAINFALL	08 SLOPE: SITE SLOPE	DIRECTION OF SITE SLOPE	TERRAIN AVERAGE SLOPE
14.2 (in)	2.5 (in)	10-20 %	VARIABLE	10-20 %

09 FLOOD POTENTIAL

SITE IS IN >100 YEAR FLOODPLAIN

10 ☐ SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY

11 DISTANCE TO WETLANDS (5 acre minimum)

ESTUARINE: A. _____ (mi)

OTHER: B. 3 (mi)

12 DISTANCE TO CRITICAL HABITAT (of endangered species)

>10 (mi)

ENDANGERED SPECIES: _____

13 LAND USE IN VICINITY

DISTANCE TO:

COMMERCIAL/INDUSTRIAL	RESIDENTIAL AREAS, NATIONAL/STATE PARKS, FORESTS, OR WILDLIFE RESERVES	AGRICULTURAL LANDS: PRIME AG LAND	AGRICULTURAL LANDS: AG LAND
A 1 (mi)	B 0.2 (mi)	C 0.5 (mi)	D 0.5 (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

LAND IN TENNESSEE RIVER VALLEY CHARACTERIZED BY ROLLING HILLS AND GENTLE SLOPES. SOME BLUFFS LOCATED ALONG RIVER. INDUSTRIAL AREAS TO SOUTH HAVE RELATIVELY FLAT TOPOGRAPHY WITH SLOPES <2%. PLANT SITE ITSELF IS HILLY WITH MANUFACTURING OPERATIONS IN RELATIVELY LEVEL SECTION.

VII. SOURCES OF INFORMATION (Cite specific references, e.g. state files, sample analysis, reports)

CORP. OF ENGINEERS DATA INVENTORY FOR STATE OF ALABAMA
GROUNDWATER RESOURCES OF COLBERT COUNTY

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 8 - SAMPLE AND FIELD INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
AL	D000652693

II. SAMPLES TAKEN

SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAILABLE
GROUNDWATER			
SURFACE WATER			
WASTE	7	ENVIRONMENTAL PROTECTION SYSTEMS, INC.	3/11/85
AIR			
RUNOFF			
SPILL			
SOIL	1	ENVIRONMENTAL PROTECTION SYSTEMS, INC	3/11/85
VEGETATION			
OTHER			

III. FIELD MEASUREMENTS TAKEN

01 TYPE	02 COMMENTS

IV. PHOTOGRAPHS AND MAPS

01 TYPE ☐ GROUND ☐ AERIAL

02 IN CUSTODY OF NO PICTURES ALLOWED AT SITE (Name of organization or individual)

03 MAPS ☒ YES ☐ NO

04 LOCATION OF MAPS ENCLOSED, ADEM FILES

V. OTHER FIELD DATA COLLECTED (Provide narrative description)

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

RCRA 3012 SITE INVESTIGATION
LABORATORY PROJECT MANAGER

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 7 - OWNER INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
AL	D000652693

II. CURRENT OWNER(S) / **PARENT COMPANY** (If applicable)

01 NAME	02 D+B NUMBER	08 NAME	09 D+B NUMBER
REYNOLDS METALS COMPANY			

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE
6601 WEST BROAD ST.			

05 CITY	06 STATE	07 ZIP CODE	12 CITY	13 STATE	14 ZIP CODE
RICHMOND	VA.	23261			

01 NAME	02 D+B NUMBER	08 NAME	09 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE

05 CITY	06 STATE	07 ZIP CODE	12 CITY	13 STATE	14 ZIP CODE

01 NAME	02 D+B NUMBER	08 NAME	09 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE

05 CITY	06 STATE	07 ZIP CODE	12 CITY	13 STATE	14 ZIP CODE

01 NAME	02 D+B NUMBER	08 NAME	09 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE

05 CITY	06 STATE	07 ZIP CODE	12 CITY	13 STATE	14 ZIP CODE

III. PREVIOUS OWNER(S) (List most recent first) / **IV. REALTY OWNER(S)** (If applicable, list most recent first)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
UNION CARBIDE			

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

PRELIMINARY ASSESSMENT

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 8 - OPERATOR INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
AL	D000652693

II. CURRENT OPERATOR (Provide if different from owner)

01 NAME	02 D+B NUMBER
ALABAMA RECLAMATION	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
RIVER ROAD	

05 CITY	06 STATE	07 ZIP CODE
MUSCLE SHOALS	AL	35660

08 YEARS OF OPERATION	09 NAME OF OWNER
BEC'DN 1 (1984)	REYNOLDS METALS

OPERATOR'S PARENT COMPANY (If applicable)

10 NAME	11 D+B NUMBER
REYNOLDS METALS	

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE
6601 WEST BROAD ST	

14 CITY	15 STATE	16 ZIP CODE
RICHMOND	VA	23261

III. PREVIOUS OPERATOR(S) (List most recent first; provide only if different from owner)

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD

PREVIOUS OPERATORS' PARENT COMPANIES (If applicable)

10 NAME	11 D+B NUMBER

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE

14 CITY	15 STATE	16 ZIP CODE

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD

10 NAME	11 D+B NUMBER

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE

14 CITY	15 STATE	16 ZIP CODE

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD

10 NAME	11 D+B NUMBER

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE

14 CITY	15 STATE	16 ZIP CODE

IV. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

PRELIMINARY ASSESSMENT

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 9 - GENERATOR/TRANSPORTER INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
AL	D000652693

II. ON-SITE GENERATOR

01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY / 06 STATE	07 ZIP CODE

III. OFF-SITE GENERATOR(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY / 06 STATE	07 ZIP CODE	05 CITY / 06 STATE	07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY / 06 STATE	07 ZIP CODE	05 CITY / 06 STATE	07 ZIP CODE

IV. TRANSPORTER(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY / 06 STATE	07 ZIP CODE	05 CITY / 06 STATE	07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY / 06 STATE	07 ZIP CODE	05 CITY / 06 STATE	07 ZIP CODE

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

No HAZARDOUS WASTE CURRENTLY GENERATED

EPA FORM 2070-13 (7-81)

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POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
AL	D000652693

II. PAST RESPONSE ACTIVITIES

01 ☐ A. WATER SUPPLY CLOSED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ B. TEMPORARY WATER SUPPLY PROVIDED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ C. PERMANENT WATER SUPPLY PROVIDED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ D. SPILLED MATERIAL REMOVED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ E. CONTAMINATED SOIL REMOVED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ F. WASTE REPACKAGED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ G. WASTE DISPOSED ELSEWHERE — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ H. ON SITE BURIAL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ I. IN SITU CHEMICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ J. IN SITU BIOLOGICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ K. IN SITU PHYSICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ L. ENCAPSULATION — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ M. EMERGENCY WASTE TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ N. CUTOFF WALLS — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ O. EMERGENCY DIKING/SURFACE WATER DIVERSION — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ P. CUTOFF TRENCHES/SUMP — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ Q. SUBSURFACE CUTOFF WALL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

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POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
AL	D 000652693

II PAST RESPONSE ACTIVITIES *(Continued)*

01 ☐ R. BARRIER WALLS CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ S. CAPPING/COVERING — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ T. BULK TANKAGE REPAIRED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ U. GROUT CURTAIN CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ V. BOTTOM SEALED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ W. GAS CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ X. FIRE CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ Y. LEACHATE TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ Z. AREA EVACUATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ 1. ACCESS TO SITE RESTRICTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ 2. POPULATION RELOCATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ 3. OTHER REMEDIAL ACTIVITIES — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

III. SOURCES OF INFORMATION *(Cite specific references, e.g. state files, sample analysis, reports)*

ADEM LAND AND WATER FILES

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 11 - ENFORCEMENT INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
AL	D006652693

II. ENFORCEMENT INFORMATION

01 PAST REGULATORY/ENFORCEMENT ACTION ☐ YES ☒ NO

02 DESCRIPTION OF FEDERAL, STATE, LOCAL REGULATORY/ENFORCEMENT ACTION

III. SOURCES OF INFORMATION *(Cite specific references, e.g., state files, sample analysis, reports)*

EPA FORM 2070-13 (7-81)

d.CT

REYNOLDS ALUMINUM

REYNOLDS METALS COMPANY • RICHMOND, VIRGINIA 23261

May 13, 1985

EMERY EXPRESS

Mr. Stephen C. Maurer
RCRA 3012 Program Manager
Land Division
Alabama Department of Environmental Management
1751 Federal Drive
Montgomery, Alabama 36130

Re: Southern Reclamation Company
RCRA 3012
Site Inspection Report

Dear Mr. Maurer:

In conjunction with Southern Reclamation Company personnel, we have made an extensive review of Environmental Protection Sytems, Inc.'s Site Inspection Report. This report contains numerous technically and factually inaccurate statements. As an example, such basic information as the name and location of the site inspected is incorrect. We believe that this report must be corrected and, as stated in these comments, the recommendation for additional study is not appropriate or reasonable.

Please find attached our detailed review of Environmental Protection Systems, Inc.'s report. The review is keyed by section and paragraph to their report and a highlighted copy of their report is also attached.

Southern Reclamation Company has extensive analytical data on the disposal area investigated by the contractor. This analytical data is documented at varying depths throughout the depth of the landfill, and would provide information helpful in your investigation. This data parallels the analytical data presented in this report and includes analytical data for the entire depth of the disposal area. This information can be made available to appropriate state officials.

We firmly believe additional study work is not warranted at this site, and that this site is well managed and maintained. In addition, analytical data is available that would eliminate the needless expenditure of funds for additional investigations.

Finally, we hereby request that you immediately make a copy of our comments available to other Federal or State officials who have previously received a copy of the report.

If you have have any questions, please feel free to contact me at (804) 281-2918.

Sincerely yours,

Charles R. Bent, P. E.
Environmental Engineer
Environmental Control Department

CRB/ych
Attachments

cc: L. L. Held, Plant Manager, Southern Reclamation Co.

RCRA 3012 SITE INSPECTION REPORT

✓ means I concur with the comment from Reynolds.

TITLE PAGE

The site inspected is not "Re: ... ation Plant." The site inspected was the ... ot now, or has it ever been, named Al: ... eynolds does operate a facility named the A ... several miles from the inspected site. This ... from the report.

Which site was actually inspected? ALD000652693 is the River Rd plant. Is it also the Southern Reclamation plant? What, then, is ALD 047867494?

1.0 EXECUTIVE SUMMARY

Is this true? Our list shows this as the "River Road Plant." What site is this? Explain

As noted above, this facility i: ... ern Reclamation Company. Please see ...

Cite the source(s) of the information in your report

While Southern Reclamation c: ... y of information on Union Carbide's fc ... understanding that the starting date ... manufactured electric furnaces is not correct. All incorrect information should be removed from the report.

EP toxicity is not used to determine a CERCLA hazardous substance

The total lead analytical data actually ranged from 541 to 2250 ppm and not between 500 to 2,300 ppm as incorrectly referenced in the executive summary. Furthermore, the report states that less than 1 ppm of the total lead was, in fact, leachable. The report fails to highlight that between 99.873 to 99.967% of the total lead in these samples are not leachable and as such, will not adversely

irrelevant

affect human health or the environment. The consultant, however, on the basis of this data, recommends additional tests. We believe this recommendation is not a reasonable recommendation based on the data presented and that no valid need for additional investigative work exists.

2.0 BACKGROUND

2.1 Location

The facility on River Road is not Alabama Reclamation and, as noted in the comments under "Title Page," is the Southern Reclamation Company. Also note that the longitude for the Southern Reclamation Company is improperly listed as 87° 37' 00". The correct longitude is 87° 36' 00". This correct information should be included in the report.

2.3 Ownership History

Please note under "Title Page" that this facility is an independent company, registered in Delaware and licensed to do business in Alabama under the name Southern Reclamation Company. The incorrect information should be deleted from the report.

2.4 Site Use History

This facility does business under the name Southern Reclamation Company as noted under "Title Page." All incorrect references to Alabama Reclamation should be removed from this report.

The use to which the owners of this site put this property after purchasing it in 1980 is not relevant to this report. The statement that the "...economy influenced the decision..." is without a basis of fact and has nothing to do with the historical use of this site. While the plant was not operational prior to and subsequent to the 1980 sale, alleged internal business-related decisions have no place in this report. These irrelevant comments should be removed from this report.

Are you referring to RCRA hazardous waste?

It should be further noted that Southern Reclamation Company, in addition to not treating, storing or disposing of hazardous wastes at this site, has never generated hazardous wastes at this site. Such clarifying language should be included in the report.

I agree strongly. You may report any hazardous substance-related activities you know about but please give your source of information

In this section of the report the contractor refers to "the company" and "they." Southern Reclamation Company has made no claims of fact concerning previous activities by Union Carbide except as noted in this review document. The report should clearly and unambiguously identify all sources of factual information or data included in the report.

2.5 Permit and Regulatory History

Manufacturing commenced during late 1984 at Southern Reclamation Company. The report incorrectly indicates no manufacturing operations took place during "1980 to mid-1984." This error should be corrected.

2.6 Remedial Actions to Date

There is no such implication. This section is good (in the report).

No emergency corrective action has ever been determined to be required for this site. There is an implication in the way this section is written that an emergency corrective action was deemed necessary for this location but never performed. This is not the case. There is no evidence presented which would support the need to conduct an emergency corrective action. In fact, the report indicates that Union Carbide installed wastewater treatment systems and that studies concluded that corrective actions were not required. This section should be rewritten indicating that emergency corrective action has been neither required nor performed at this site.

2.7 Summary Trip Report

definitely

Please note grammatical errors. These errors should be corrected.

A statement concerning "the pipe" and a "let pipe" is meaningless and confusing. Proper terminology should be used in this report.

Is the "discharge pipe" a part of the NPDES outfall?

The "drainage" referenced in this section is a discharge through an NPDES permitted outfall. The report should clearly indicate that the "drainage" is permitted and neither illegal nor unregulated.

SECTION 3.0

3.1 Topography

The facility inspected is named Southern Reclamation Company. All incorrect references to the facility's name should be removed from the report. Please note comments under "Title Page."

3.2 Surface Waters

Please note that the facility inspected was Southern Reclamation Company and not Alabama Reclamation. The Tennessee River is a boundary line for this facility and is not located "within 4 miles" as incorrectly stated in the report. In addition, Southern Reclamation Company does not discharge wastewater to Pond Creek as incorrectly noted in the report. Comments included in the report concerning Spring Creek, flood plains and Haw Pond are equally incorrect and confuse the actual situation. This incorrect and superfluous information should be deleted from the report.

Where is the discharge?

Where are these bodies of water?

3.3 Geology and Soils

The facility inspected is named Southern Reclamation Company and it is not located on Second Avenue. Incorrect information concerning site name and location should be corrected.

3.4 Groundwater

This report has incorporated many inaccurate and incorrect statements concerning the identification and location of the site inspected, and we therefore

question the accuracy of this entire section. Based on the other numerous inaccuracies in the report, we question whether our site and the technical hydrogeological data presented are for the Southern Reclamation Company site. This data should be carefully reviewed and only relevant site specific information included in the report.

3.5 Climate and Meteorology

Is this true?

The annual precipitation and evaporation rates stated in this report appear incorrect. No reference is noted in the report specifically for this data and we question its accuracy. This data should be carefully reviewed and only correct site specific data included in this report.

3.6 Land Use

Please note that Alabama Reclamation is not located within 0.1 miles southeast of the Lakeview Heights subdivision and that Alabama Reclamation is not the facility inspected. These inaccurate and incorrect comments should be corrected or deleted from the report.

3.7 Population Distribution

Please note the "Title Page" comment which identifies the name of the facility as Southern Reclamation Company. All incorrect references to the name of this facility should be removed from this report.

3.8 Water Supply

Please note that the name of this facility is Southern Reclamation Company and not Reynolds Metals as noted in the text. In addition, the Southern Reclamation Company does not receive water from the Tennessee River nor is their water treated at the Reynolds Metals Reduction Plant. Southern Reclamation Company receives water from the City of Muscle Shoals. All incorrect information concerning water supply should be removed from the report.

Is the Muscle Shoals well still used? Are there records of spring useage?

The report indicates that there are numerous springs in Colbert County and that these springs are used for domestic stock and industrial needs. The report fails to note how many springs are in Colbert County or the actual number used for domestic stock or industrial water uses. The report implies that all Colbert County wells are used for domestic stock watering and industrial needs. No evidence is presented or referenced to support this fact. The accuracy of the statement concerning usage of springs in Colbert County is, at best, questionable and the relation of this information to the purpose of this inspection is unclear. All irrelevant data or information should be removed from the report. In addition, all incorrect or inaccurate information should be corrected or removed from the report.

3.9 Critical Environments/Endangered and Threatened Species

Again, please note that the name of the facility inspected is Southern Reclamation Company and not Reynolds Metals. This incorrect information should be removed from the report.

4.0 WASTE TYPES AND QUANTITIES

4.1 Waste Quantities

Was the K092 sludge "exposed" or "disposed" on site?

The 1980 Part A RCRA hazardous waste permit which was submitted for this facility identified three disposal areas containing K092 waste material. The total area identified was 17.1 acres and not 18 acres as noted in the report. Furthermore, the K092 waste material was not reported to be "exposed" in these disposal areas. These disposal areas have cover material including vegetation as noted in the report. The use of the word "exposed" is not descriptive of the disposal areas and, in fact, has a negative connotation not rightly deserving of this facility's past waste management practices. Furthermore, the report makes no reference to the fact that the U. S. EPA removed K092 waste materials from their regulated list after determining it was not, in fact, hazardous. All incorrect information must be removed from the report and clarifying language included indicating K092 waste material as non-hazardous and not regulated by the State of Alabama or the U. S. EPA.

irrelevant comment

4.2 Waste Disposal Methods and Locations

The generation of emission control sludge and the use of settling ponds were activities conducted by Union Carbide. Southern Reclamation Company has never operated any of the four disposal areas referenced in the report. The report should properly describe the actual situation in regards to these facilities.

The facts do not support the report's contention that not all of the disposal areas were identified in the Part A permit application. The Exhibits 2.1 and 2.2, which are a part of the report, were taken from the Part A permit application. Both exhibits clearly identify, by size, the disposal areas. The disposal areas encompass 1.5, 2..6 and 13.5 acres as noted in the report and Exhibits 2.1 and 2.2. The report should include only factual information and should be in agreement with the Exhibits attached to the report.

4.3 Waste Types

irrelevant

The generation of emission control dust sludge from ferromanganese production, i.e. K092, was done during the time Union Carbide owned this facility. The Part A permit application was filed in 1980 for K092 waste material that was generated and disposed of by Union Carbide. The U. S. EPA declared K092 waste material to be non-hazardous in 1981 and not in 1980 as noted in the report. This section should be expanded to clearly indicate the sequence of events leading up to the U. S. EPA declaring K092 waste material to be non-hazardous in 1981.

5.0 LABORATORY DATA

5.1 Summary

irrelevant

The leaching levels for cadmium, lead, and chromium are extremely low. The percentage of the total samples that are non-leaching are as follows: Cd, 98.5 to 99.02%; Pb, 99.89 to 99.97%; Cr, 99.71 to 99.92%. The samples collected during this site investigation have extremely low leaching levels and the report

should clearly highlight these facts, and the fact that none of the wastes investigated are actually hazardous.

6.0 TOXICOLOGICAL/CHEMICAL CHARACTERISTICS

This entire section has been taken out of context and no meaningful conclusions can be drawn concerning the toxicological information and the analytical data provided in the report. The report does not make any determination as to whether organic or inorganic forms of cadmium, chrome, or lead exists in the samples. Neither does it present data on the presence of chromic acid salts or chromate salts in the samples, yet the toxicological section of the report presents a discourse on the toxicity of such compounds. Similarly, toxicological data on hexavalent chromium is included in the report but no analytical data is presented showing the presence of such compounds at the disposal sites. In fact, no valid scientific link between the toxicological information presentd and the analytical data collected is made in the report. Any conclusions based on the referenced toxicological data, and without toxicological testing of the samples collected during the visit, are unsubstantiated and without a scientific basis. This section should be substantiated by scientifically acceptable toxicological testing or removed from this report.

irrelevant

7.0 CONCLUSIONS AND RECOMMENDATIONS

The actual disposal areas involved in this investigation total 17.1 acres. Only correct and accurate information should be included in this report.

As noted in Section 5.0, extremely low leaching levels were observed in the samples collected during this visit. The conclusion section should therefore highlight the low leaching levels observed, and clearly state that none of the wastes analyzed were hazardous by State or Federal definitions.

no

As noted in this section, the report states that the contractor was aware of information that indicates the approximate depth of the disposal areas. The report then goes on to conclude that additional work be done to verify the depth of the disposal areas. We take great exception to this recommendation since information on the depth of materials is readily available. Southern Reclamation Company has data available on the depth of these disposal areas, and EP Toxicity data at varying depths which shows that the leachability findings of this study are similar to the situation at lower depths. Southern Reclamation Company would, of course, be willing to make this data available to appropriate State officials. We do not therefore believe that an adequate basis exists for any further work at this site and believe that the report should be modified accordingly.

this would be good to have

We do not need to know whether any material on site is EP toxic

EXHIBITS

Analytical Reports

Please note that the name of the facility inspected is Southern Reclamation Company and not Reynolds Metals Company or the River Road Plant. Please delete these incorrect references from the report.

RCRA 3012

SITE RANKING SCHEME

irrelevant

Item 1

No definition of hazardous substance is detailed in this document. The Site Inspection Report listed no hazardous substance, yet the Site Ranking Scheme indicates such material is "suspected" at this site. This conclusion is unsupported and unsubstantiated in the report. The item should be reclassifed as "no hazardous substances."

Item 2

There is no evidence in the report substantiating surface or groundwater pollution. The contractor did not, to our knowledge, sample either surface or groundwater. An assessment of "No pathway" or "not known for sure" are the only possible options based on available data. This classification should be changed.

Item 5

This site is fenced or bound by the Tennessee River, all of which limit site access. Visitors are allowed on the plant site only for work-related purposes. This item should be reclassified "low or no potential contact."

RCRA 3012

SITE SAFETY PLAN

Part A

Site:

This location does not operate under the name Reynolds Metals Company or the River Road Plant. The plant is the Southern Reclamation Company, which is an independent and privately held Delaware Corporation qualified to do business in the State of Alabama. This incorrect information should be removed from the Site Safety Plan.

Part B

Waste Type(s):

Throughout the Site Inspection Report, waste material is referred to as "sludge." The Site Safety Plan makes reference to "solid" wastes. Neither the Site Inspection Report nor the Site Safety Plan explains this difference in terminology. Such differences should be clarified or consistent terminology should be used.

Part B

Characteristics:

heavy metals are toxic

The Plan describes the plant's wastes as "Toxic." Nothing in the data provided to Reynolds supports a hazardous waste characteristic classification of either Toxic or EP Toxic. The descriptions used under this section are the U. S. EPA hazardous waste characteristics, and the data collected during this study

does not support the conclusion of EP Toxic or Toxic. This assessment should be substantiated by factual information or removed from the plan.

Part C

Hazard Evaluation:

Southern Reclamation Company has never used cyanide at this facility. Southern Reclamation is a reclaimer of aluminum and does not use cyanide. Furthermore, it is our understanding that the former owners of this facility did not use cyanide in their process. While low levels of cyanide are present in the ponds, based on analytical data, only correct information should be included in the plan.

RCRA 3012

SITE SCREENING STUDY FORM

Site Information:

make a note of this in the summary

There is no location currently known as Reynolds Metals River Road Plant. The site inspected operates under the name Southern Reclamation Company. This incorrect information should be removed from this form.

The "site manager" is not Mr. Charles Bent. Mr. Bent is an environmental engineer with Reynolds Metals Company and is headquartered in Richmond, Virginia. Only correct information should be included in this form and incorrect information should be deleted.

Site Background:

The Southern Reclamation Company has never used cyanide in the operation of this facility. It has been reported that the former owners/operators did not use cyanide in their process. However, based on analytical results, low levels of cyanide are present in the ponds. Only correct information should be included in this form.

Sampling Requirements:

Southern Reclamation Company did request and receive split samples at the inspection, contrary to the information provided in this form. Only correct information should be included in this form.

POTENTIAL HAZARDOUS WASTES

SITE INSPECTION REPORT

Part I

Item II

The name of the facility inspected is the Southern Reclamation Company. Southern Reclamation Company is an independent and privately held corporation. The facility inspected is not now, or has it ever been, named Alabama Reclamation. Reynolds Metals Company does operate a facility named Alabama Reclamation at a location several miles from the inspected site. This incorrect information should be removed from this report.

Item III

The Southern Reclamation Company does not currently operate any of the three landfill sites inspected. Therefore, this site is not "active" for the purpose of this inspection report. Only correct information should be included in this report.

In addition, we question the accuracy of the "beginning year" listed in this Site Inspection Report. This information should be carefully reviewed and verified, and only correct information included in this report.

The address listed for the plant engineer is not Alabama Reclamation. Please see Part I, Item II. All incorrect information should be deleted from this report.

POTENTIAL HAZARDOUS WASTE

SITE INSPECTION REPORT (CONT'D)

Part 2

Item III

The gross acreage listed is incorrect. Your Exhibit 2.2 lists 17.1 acres, not 18 acres. Only correct information should be included in this report.

Part 2

Item IV

The concentrations listed are incorrect. The actual analytical data gives total lead levels of between 541 mg/kg and 2,250 mg/kg. The total leachable lead levels vary from below 0.01 mg/kg to 0.74 mg/kg. The lead concentrations are incorrectly listed as varying between 500 to 2,200 mg/kg. All data included in this report should be correct and should accurately reflect data contained elsewhere in this report.

Part 3

Item II

As noted under Part 2, Items III & IV, the listed acreage and lead concentrations are incorrect. Again, all data included in this report should be accurate and correct.

POTENTIAL HAZARDOUS WASTE

SITE INSPECTION REPORT (CONT'D)

In addition, we seriously question the basis for concluding that there is "contamination of soil" in the sites inspected. Placement of waste materials in landfills does not automatically contaminate soils. There is no evidence presented to support this conclusion. Lacking such evidence, we believe this assessment and the conclusions which follow must be carefully reviewed and corrected.

Part 4

Item II

Southern Reclamation's NPDES and air permits are not inactive. Active permits under these respective programs do exist for the facility. The report should be changed to correctly indicate Southern Reclamation Company's current water and air permit status.

Item III

As noted under Part 2, Item III, the listed acreage is incorrect. Only accurate data should be included in this report.

The accessibility to the entire plant site is restricted due to perimeter fencing and the Tennessee River. This item is incorrect and should be corrected indicating that access to this site is well controlled and that there is no easy site access.

POTENTIAL HAZARDOUS WASTE

SITE INSPECTION REPORT (CONT'D)

Part 5

Item II

The City of Muscle Shoals reportedly gets its drinking water from deep wells located approximately 3 miles from inspection site and not from surface water as indicated in the report. We question the relevance of this information to this inspection and request that only accurate and relevant information be included in the report.

The information is relevant

Item III

We question the basis for concluding the "depth to groundwater" and "direction of groundwater flow." There is no evidence presented in the report to support the information provided. Only factual information that can be supported by technical data should be included in this report, and all technical references should be clearly documented.

Item VI

We question the basis for concluding that the inspected sites have less than "impermeable" soil conditions. There is no evidence presented to support this technical conclusion. No permeability tests were conducted by the contractor at the time of this site inspection and no permeability test data is presented in this report. We further question what factual data was used to conclude that there

are contaminated soils, much less soil contamination extending to a depth of from "8-12 feet." Again, there is no evidence presented or referenced indicating any type of soil contamination. The Corp of Engineers Data Inventory referenced on this page should be included in the attachments to the Site Inspection Report, if it is the basis for these conclusions. Unless these conclusions can be supported by site specific factual data, they should be removed from the report.

Part 7

Item II

As noted under Part 1, Item II, the name of the facility inspected is Southern Reclamation Company. Incorrect information should be removed from this report.

Part 8

Item II

As noted under Part 1, Item II, the name of the facility inspected is not Alabama Reclamation. The correct name of the facility inspected is Southern Reclamation Company and this corrected information should be included in the report.

2. PROJECT MANAGEMENT SUMMARY

Site Name: REYNOLDS METALS CO. - ALABAMA RECLAMATION

Site Number: ALD000652693

Owner: REYNOLDS METALS COMPANY

Operator: ALABAMA RECLAMATION

Site Status: [X] Active [ ] Inactive [ ] Unknown

Priority: [ ] High [ ] Medium [X] Low [ ] None

3. FINAL DISPOSITION

I. EPS Final Review - Date: 3/28/85

Comments:

Follow Up Required [X] Yes [ ] No

II. ADEM Review - Date: 4/4/85 - CML

Comments:

Follow-up Action Required [X] Yes [ ] No

III. Final Disposition:

Review & revise Date:

Edited & correct Date:

Transmitted Date:

File close-out Date:

Initiate site inspection Date:

4. ADDITIONAL COMMENTS (ONGOING & FINAL)

Expecting written comments on this report from Mr. Chuck Bent of Reynolds early part of May, 85

Mauer

RCRA 3012 SITE INSPECTION REPORT

FOR

REYNOLDS METALS COMPANY
ALABAMA RECLAMATION PLANT
ALD000652693
MUSCLE SHOALS, ALABAMA
SITE INSPECTION
JANUARY 15, 1985

Presented to:

Alabama Department of Environmental Management
Montgomery, Alabama

Presented by:

Environmental Protection Systems, Inc.
Jackson, Mississippi
Pensacola, Florida
Mobile, Alabama

Project No. 1.84.174.01
March, 1985

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EXHIBITS
REFERENCES
PHOTOGRAPHS (Not allowed at this facility)

1.0 EXECUTIVE SUMMARY

The Reynolds Metals facility, located on River Road in Muscle Shoals, Alabama, is known as Alabama Reclamation. This facility was purchased in 1980 from the Union Carbide Corporation. Due to economic considerations during this time period, Reynolds Metals has not operated on this site. Operations began in mid-to-late 1984. Due to this, it is apparent that no waste material at this site has been placed there by the Reynolds facility.

The Union Carbide facility began operation at this site in 1940. They were involved in the manufacture of ferro-silicone alloys and electric furnaces. Contaminated waste from the plant resulted from the washing of flue gases and gas scrubbers, which removed non-combustible material for discharge to the atmosphere. Cyanide was also present in the scrubbing process. This cyanide was placed in the destruction unit, which was comprised of chlorination and pH adjustment. In order to meet the suspended solids requirement of their NPDES permit, the solids in this water were settled using a floculator. The solids were settled in at least four areas on the site. They were identified in a Part A application filed by the Reynolds Metals facility. Each of these areas were indicated as having the following acreage: 13.5, 2.6, and 1.5. The solids in these areas are visibly different from surrounding naturally occurring soils. In addition, these areas have been invaded by kudzu and other shallow root system plants. Analysis of the material between 12-18 inches deep in these areas indicates total lead levels present in a range from 500 to 2,300 ppm. EP-toxicity analysis indicated that <1 mg/l of this material was leachable. Further action is recommended to determine the total depth of these disposal areas and whether or not the material at the base is EP-toxic.

2.0 BACKGROUND

2.1 Location

The Reynolds Metals facility on River Road is located at the following address:

Alabama Reclamation
River Road
Muscle Shoals, Alabama 35660
Colbert County (033)
Latitude 34°47'37"
Longitude 87°37'00"

It should be noted that this facility is known in the Alabama Department of Environmental Management (ADEM), as Reynolds Metals-River Road Plant; however, its correct name is Alabama Reclamation Plant. The directions to the plant are as follows: Take Second Avenue to Ford Road. Turn left on Ford Road, travel to River Road and turn right. The plant is located to the left. Refer to Exhibit 2.1 for Topographic Map.

2.2 Site Layout

Exhibit 2.2 is a line drawing of the Reynolds facility indicating the three waste disposal areas. These areas are also indicated in Exhibit 2.1 on the Topographic Map. Access to the facility can be obtained by gates along River Road. The area is fenced, thereby limiting access to plant areas. The northern most border is the Tennessee River.

2.3 Ownership History

This facility is currently owned by the Reynolds Metals Company, 6601 West Broad Street, Richmond, Virginia; 23261. The facility was purchased in 1980 from the Union Carbide Corporation. Purchase was handled through the

Union Carbide Real Estate office in Terrytown, New York. Union Carbide operated this facility from 1940 to 1980.

2.4 Site Use History

As was indicated in Section 2.3, the Reynolds Metals Company purchased the facility in 1980 from the Union Carbide Corporation. Reynolds had anticipated using this facility immediately; however, the economy influenced the decision. Therefore, Reynolds did not begin using the facility until late 1984. The Reynolds facility itself, does not treat, store, or dispose of hazardous waste. Currently process information is proprietary.

Review of the AWIC files for Union Carbide indicated that operations initially began around 1940. The plant was involved in the manufacturing of ferro-silicone alloys in electric furnaces. Contaminated waste from the plant resulted from the washing of flue gases and gas scrubbers, which removed non-combustible materials before discharged to the atmosphere. The solids removed consist principally of carbon and silica. Cyanide was also present in the gases and was removed in the scrubbing process. The company indicates that cyanide had been treated since operations began. Prior to 1965, the company operated a kelsenum carbide furnace at the plant. They indicated that adequate cyanide treatment had been provided the plant since commencement of operation. The primary waste problem was suspended material in the wastewater. This suspended carbonaceous material was the subject of many complaints from boat and property owners. Union Carbide made improvements in their wastewater treatment system in early 1971 to remedy the solids problem. This involved settling the dust in ponds on the facility. Three ponds are located on the property. One is 1.5 acres,

another is 2.6 acres, and the third is 13.5 acres. This is indicated as a settling basin on the topographic map. Reynolds Metals filed a Part A application for this plant based on the placement of the emissions control dust in these areas. At that time, it was listed as K092 - emission control dust sludge from ferromanganese production. This was subsequently removed from the Environmental Protection Agency (EPA), generic waste list.

2.5 Permit and Regulatory History

The Union Carbide facility was regulated both under air and water permits throughout its history. The facility primarily generated emissions control dust, which was combined with water and the gas scrubbers. This water was treated prior the discharge to the Tennessee River. In 1980, the Reynolds Metals Company purchased the Union Carbide facility. At that time, they filed a Part A application for the disposal areas present on the site. The Part A application was filed protectively, so the Reynolds facility would not have to file both a Part A and Part B RCRA application. The waste material was tested and interim status application was withdrawn. No manufacturing operation took place between 1980 and mid-1984. Therefore, there were no active permits during this time period.

2.6 Remedial Actions to Date

There is no record of any emergency corrective actions being performed at this site. During the early 1970's, the Water Improvement Commission did have several complaints about the Union Carbide facility. At that time, it was indicated that high amounts of solids were being discharged to the Tennessee River. Subsequently, Union Carbide installed an improved wastewater treatment system. The ASIC, as well as Florence State

University, ran a feasibility study to determine the effective removal of the material from the embayment. This was done in 1971. At that time, it was determined to be undesirable to remove the deposited material. Approximately 12 inches of silt and organic material was found to overlay the carbonaceous solids. Removal of this material would have created an extremely undesirable condition downstream. Therefore, the material was left in the embayment.

2.7 Summary Trip Report

Environmental Protection Systems, Inc. (EPS), conducted a RCRA 3012 site investigation with limited sampling, on January 15, 1985. The sampling team arrived at 8:45 a.m., and met Mr. Earl McGuire, a plant engineer. Weather conditions were clear and cold, with temperatures ranging from 22°F to approximately 38°F during the day. It was slightly winding in the early morning. Weather reports indicated a wind-chill factor of -2°F. The EPS sampling team consisted of Ms. Donalea Dinsmore, Environmental Chemist and Mr. Thomas McAlpin, Field Sampling Support Staff. At that time, it was explained that the current processes at this facility were proprietary, and no pictures were to be allowed of the plant site. Mr. McGuire had been given a copy of the site sampling plant prior to site investigation in order that the areas of concern could be located.

Sampling began at approximately 10:00 a.m., when three samples were composited from the 13.5 acre settling basin (RE-S03-SB). In addition a field replicate sample was also taken (RE-S04-SB). This replicate was taken within a foot of the three soil samples. This 13.5 acre basin appeared to be diked to a level approximately 15 feet above the road surface. The perimeter of this basin was covered in kudzu, which extended

into the basin itself. The pipe was evident around the perimeter of this settling basin and a let pipe was evident at the north end. The center of the basin was sparsely populated with grasses and bushes. Samples were taken in unvegetated areas and at a depth of approximately 18 inches. Areas of erosion were evident throughout the basin area. Materials within this basin appeared to be somewhat wet and soft. It should be noted that access to this basin would be severely limited, depending upon seasonal considerations. The vegetation around this basin was exceedingly dense and would likely limit access in the spring, summer, and fall.

The next area to be investigated was the 1.5 acre disposal site. This was located north of the water treatment plant. At this plant area, there appeared to be two areas involved. The first was apparently a diked basin due north of the treatment plant. This basin was in the low area beneath the treatment plant, and with little exception, appeared to be covered in kudzu and grasses. Very few roots appeared to extend into the waste material. The dikes appeared to be approximately 5 feet above the level of fill material. Approximately ten trees were located in this area, and twenty to thirty trees were observed in the perimeter. This entire area was in close proximity to the Tennessee River. A swimming area was noted in the slough. Drainage from the area is toward the Tennessee River and the topography slopes approximately 150 to 250 feet over a distance of about 100 feet. Three soil composites were taken in the area near the trees (RE-S01-LA). The samples were taken from a depth of approximately 6 to 12 inches. The second area of concern appeared to be a discharge pond for the treatment plant. This pond was located due west of the treatment plant, and approximately 6 inches of water was evident in this area. A discharge pipe was also noted, extending into this ponded area. Grasses

were noted to be present throughout the area; however, root systems were not evident. In addition, birds were noted to habitat the area. Three samples were taken at the water table in this area (RE-SO2-SP). It was estimated that the diameter was approximately 75 yards across.

The sampling team next moved to the 2.6 acre disposal site. This area appeared to be entirely fenced with at least three gates evident. This area appeared to be a naturally low area on the plant site. Prior to taking the samples in the area, a background sample was taken. Immediately adjacent to this disposal area was a hill, which did not appear to have been used for any of the plant activities. No waste-like material was evident, and a sample was taken beneath the vegetation (RE-SO7-AS). Initial inspection of this 2.6 acre site indicated that material similar to that seen in the other two disposal sites was evident across the entire area. This area also appeared to be diked and was covered in dried kudzu. A back hoe may have gone over some of the areas in this disposal site, as tire tracks were evident. Two carts of dissimilar material were potentially identified as silica from the furnaces. These were dumped down the side of the hill into the waste area. An abandoned tank, potentially propane, was noted at the top of the hill, as well as an empty metal explosives container. Composite sample was taken along sparsely vegetated areas on the east side of this disposal area (RE-SO5-LA). A small pile of material, dissimilar to the waste material, was included in the sample. The final sample taken in this disposal area was on the southern side of the disposal site. Inspection indicated that the material disposed here was similar to that encountered in other areas (RE-SO6-LA). The inspection concluded approximately 1:15 p.m., when the sampling team left the site.

3.0 ENVIRONMENTAL SETTING

3.1 Topography

The Reynolds Metals facility lies in the Tennessee Valley. The land surface is characterized as rolling with a maximum relief of approximately 400 feet and an average altitude of about 600 feet. This area is generally a plateau of moderately even and relatively gentle slopes. Slopes exceeding 10 percent are uncommon on the average. The area in an around the Reynolds Metals facility is fairly flat with slopes less than 5 percent generally present across the area. As this is an industrialized section of the Muscle Shoals area, the plant has generally graded the land where necessary to provide slopes less than 1 percent.

3.2 Surface Waters

The Alabama Reclamation facility is bordered to the north by the Tennessee River. Several sloughs are located in close proximity to the northern most waste disposal area. This facility is located in close proximity to highly developed recreational waters, and the water supply intake is just a short distance downstream from the facility. The major surface water at this facility is the Tennessee River which lies within 4 miles to the north of the site. Wastewater from the Reynolds facilities is discharged to Pond Creek. In addition, approximately 2 miles to the west of the site is Spring Creek which also flows to the Tennessee River. Examination of flood plains in the area indicate that portions of the northern sections of the Reynolds facility are located in flood-prone areas. Approximately 4 miles to the southeast of the site is Haw Pond.

3.3 Geology and Soils

The Reynolds Metals facility on Second Avenue is located in the Tennessee Valley District of the Highland Rim section of the Interior Low Plateau province of the Interior Plains geomorphic division. This area is characterized as a chert belt in the north with a limestone plain along the river. The areas in and around the Reynolds Metals facility appear to be mainly Ft. Payne Chert-Tuscumbia Limestone. The Ft. Payne Chert is reported to underlie all of Colbert County. However, in most parts of the county, it is covered by younger rocks. The formation crops out and is well exposed along the southern blocks of the Tennessee River valley and for short distances upstream along some of the major tributaries of the Tennessee River. Ft. Payne Chert in Colbert County consists of gray, light gray, and white crystalline hard limestone containing large quantities of chert which occurs as thick beds and as nodules which are disseminated throughout the limestone. The thickness of the Ft. Payne Chert and subsurface is comparatively uniform; it ranges from 162 to 207 feet and averages 186 feet. The formation is overlain conformably by the Tuscumbia Limestone and is underlain unconformably by the Chattanooga Shale. The Ft. Payne Chert is reportedly a good aquifer. The Tuscumbia Limestone underlays almost all of Colbert County as well. It crops out over large areas in the northern parts of the county. Exposures are common along the bluffs overlooking the Tennessee River and along the valleys and larger tributaries. The Tuscumbia Limestone is a light gray-to-gray, medium bedded, hard, dense, finely crystalline limestone. It contains considerable quantities of chert as nodules and thick beds. In most parts of the county, the formation has been deeply weathered to clay and less than 100 feet of limestone remains.

The predominant type of soil in this area is the Decatur-Dewey. As with most of the soils in the Limestone Valleys and Uplands, these soils are formed from weathering limestone. Topography is gently rolling with predominant slopes from 0-15 percent. The profile characteristics of Decatur soils are deep with dark brownish, loamy surface over a dark reddish, clay-like subsoil. These have moderate permeability and are well drained. Dewey series soils are also deep soils but with brownish, loamy surface over a reddish, clay-like subsoil. They are also moderate permeable and well drained. More than 75 percent of the land of this soil type is considered to prime farmland.

3.4 Groundwater

As was indicated above, both the Ft. Payne chert and Tuscumbia limestone are good aquifers in this area. Groundwater occurs in solution openings from fractures and bedding plains. These openings are best developed in areas such as Spring Creek valley which is to the south and west of the site. Wells in these formations can yield as much as 500 GPM per well. Tuscumbia Spring is the largest spring in Colbert County and one of the largest in Alabama. This spring discharges from Tuscumbia Limestone. This spring has a maximum discharge of about 70 MGD and a minimum discharge of about 6 MGD. This spring appears to be also southwest of the site. The U.S. Army Corps of Engineers owns a well in close proximity to the Reynolds facility. This well taps the Ft. Payne Chert-Tuscumbia Limestone aquifer and is reported to have artesian flow. In the same general vicinity of the site, the U.S. Government also owns a spring. This is known as TVA spring. The water-bearing formation in this case is Ft. Payne Chert. The Town of

Muscle Shoals has a well reportedly a depth 178 feet, also tapping Ft. Payne Chert. Tuscumbia limestone was tapped in a U.S. Geological Survey well at between 200 and 300 feet. Aquifer recharge in Colbert County occurs mainly in late fall, winter, and early spring. Movement of groundwater is generally northward toward the reservoirs formed by the Tennessee River. An Alabama Geological Survey publication for Colbert County indicates that in the winter and spring, when water levels are high and the rock openings are filled, rainfall results in rising water levels over a relatively short period of time. In the summer and fall, when water levels are low and rock openings have been drained, soil moisture has been depleted, and precipitation results in a more gradual rise of water levels--possibly no rise at all. Groundwater discharge consists mainly of evaporation from soil surfaces, transpiration from plant surfaces, discharge from springs, and pumpage from wells.

3.5 Climate and Meteorology

In general, Colbert County can be characterized as having a mild, humid climate. Most of the precipitation is in the form of rain, but snow generally occurs about twice a year. Freezing temperatures generally do not last more than two days. The highest average monthly precipitation generally occurs in March, and the lowest in September. More specifically, the Muscle Shoals area receives an annual precipitation of about 48 inches, at an annual evaporation rate of 33.8 inches for a net precipitation of 14.2 inches. The one-year 24-hour rainfall is reportedly 3.25 inches with a maximum 24-hour precipitation recorded at 7.8 inches. On a seasonal basis, the Muscle Shoals area receives a winter average of 15.6 inches, a spring average of 13.5 inches, a summer average of 10.4 inches, and a fall

average of 8.6 inches. The annual snowfall is reportedly 2.9 inches. Seasonal temperatures range from a winter average low of 42.9^{o}F to a summer average of 78.9^{o}F.

3.6 Land Use

The facility is bordered to the north by the Tennessee River. The Tennessee River is used for drinking water, hydroelectric power and recreation. The Tennessee Valley Authority (TVA) has a large power plant west of the facility and operates the Wilson Dam. Several major manufacturing operations are located also to the south of the facility. To the east of the facility, the area becomes mainly cropland and pastures. Residential areas are located along the Tennessee River backwaters both to the east and west of the facility. The Lakeview Heights subdivision is located within 0.1 miles south and east of the Alabama Reclamation facility. The Lakeview subdivision is located within 0.75 miles due west of the site. The population center of Muscle Shoals is approximately 5 miles west of the site. The Muscle Shoals Airport is located within 3 miles to the southwest.

3.7 Population Distribution

The Reynolds Metals facility is outside of the Muscle Shoals city limits. The area is primarily industrial with few residences evident. This area is greater than three miles from the population of Muscle Shoals. To the east of the site, the land use is primarily farmland and, therefore, is not highly populated. Approximately a mile and a half northwest of the site are two subdivisions--Lake View Highland and Steenson Hollow. Southwest of

the site is the Muscle Shoals Airport. There are few residences surrounding this area as well. It appears that the largest population affected by this site would be employees of the Reynolds Metals facility.

3.8 Water Supply

Reynolds Metals gets its drinking water supply from the Tennessee River. This water is treated at the Reynolds Metals reduction plant before being directed to the individual facilities. The city of Muscle Shoals uses the Tennessee River for its water source. Water supply records indicate that in the late 1950's and early 1960's, the city of Muscle Shoals had a groundwater well for public use. The status of this well is unknown at this time. Numerous springs are present in Colbert County. These springs are used for domestic stock and industrial needs.

3.9 Critical Environments/Endangered and Threatened Species

The Reynolds Metals facility does not lie in a critical habitat of an endangered species. The critical for the Alabama cave fish is approximately 10 miles northwest of the Reynolds Metals facility along the Tennessee River. The species of concern in this area are listed as follows:

Species Common Name	Range	Status
Gray Bat	Eastern 2/3 Alabama	Endangered Fed
Bald Eagle	Statewide	Endangered Fed
Golden Eagle	Statewide	Endangered Alabama
Peregrine Falcon	Statewide	Endangered Fed
Osprey	Statewide	Endangered Fed
Tuscumbia Darter	Springs of Tenn. River drainage system	Threatened Alabama
Alabama Cave Fish	Key Cave along Tenn. River	Critical habitat Alabama

4.0 WASTE TYPES AND QUANTITIES

4.1 Waste Quantities

No hazardous waste is currently being generated at this facility. In 1980, permit application for RCRA interim status indicated that K092 sludge was exposed on approximately 18 acres of land. It is unknown to what depth this material was present. Information in the AWIC files indicates that several earthen basins were present on this site. These ranged in depth from 8-12 feet.

4.2 Waste Disposal Methods and Locations

Air emissions control sludge was disposed in settling ponds on the plant site. This was done in order to meet the suspended solids requirement in their discharge permit. Four areas were observed at the plant site. The largest area is a 13.5 acre settling basin, which is located east of the manufacturing operations. This is shown on the topographic map. The next area is located to the west and slightly north the main manufacturing buildings. It is approximately 2.6 acres. The final two areas are located in the vicinity of the water treatment plant. One disposal area is located north of the plant, while the second area is located to the west of the plant. These comprise approximately 1.5 acres. With the exception of the basin west of the water treatment plant, each of these areas was indicated in the Part A application for the facility. The basin to the west of the water treatment plant was observed during the site investigation.

4.3. Waste Types

The Union Carbide facility generated emission control dust sludge from ferromanganese production. This was listed as K092 on the original RCRA regulations; however, by 1980, this was deleted from the listing. There are no other known hazardous wastes being generated at this facility.

5.0 LABORATORY DATA

5.1 Summary

Sample locations are described as follows:

Sample Number	Matrix	Description
RE-S01-LA	Waste	Composite from disposal area north of water treatment plant. Indicated size, 1.5 acres. Sample taken near the cluster of approximately ten trees.
RE-S02-LA	Waste	Composite from discharge pond west of water treatment plant. Sample taken at water table level.
RE-S03-SB	Waste	Composite of three holes in 13.5 acre settling basin area.
RE-S04-SB	Waste	Composite of waste material in 13.5 acre disposal site south of previous sample (RE-S03-SB).
RE-S05-LA	Waste	Composite on the east side of the 2.6 acre disposal area. A small pile of dissimilar material was included in this composite.
RE-S06-LA	Waste	Composite of typical waste material in 2.6 acre disposal site.
RE-S07-AS	Soil	Background sample taken on the top of the hill, immediately adjacent to the 2.6 acre disposal area.
RE-S08-LA	Waste	Field replicate of RE-S03-SB. Sample taken and composited along side the referenced sample. Each hole was within 2 feet of its replicate.

Sample results, as well as quality control information is presented in Exhibit 5.1. To summarize these results, cadmium and lead were found in concentrations greater than the background level (cadmium ranged from 4.7 to 7.1 mg/kg, as opposed to 0.9 mg/kg in the background. Lead ranged from 541 to 2,250 mg/kg, as opposed to 28.8 mg/kg in the background).

EP-toxicity leachate for these metals indicated only small amounts of cadmium were leachable (less than 0.1 mg/l). Leachable lead generally ranged in the vicinity of 0.7 mg/l. Background levels for chromium were approximately 23 mg/kg. The maximum determined concentration of any of the waste material was approximately 65 mg/kg. EP-toxicity leachate of these samples indicated a maximum leachable chromium of 0.07 mg/l. Total cyanide levels varied from a background range of 2.5 mg/kg to 11.5 mg/kg. These results averaged approximately 5 mg/kg.

5.2 Quality Assurance Review

All sample collection, sample preservation and chain-of-custody procedures used during this investigation were conducted in accordance with the standard operating procedures as specified in the Quality Control/Quality Assurance Plan for the Analytical and Environmental Division of Environmental Protection Systems, Inc., revised August 31, 1984. All laboratory analyses and quality assurance procedures used during this investigation were in accordance with standard procedures and protocols in the above specified document. Spiking levels and recovery data area attached in the analytical report presented in Exhibit 5.1. No suspect data or deviation from established protocol was noted.

6.0 TOXICOLOGICAL/CHEMICAL CHARACTERISTICS

Cadmium compounds had been given an overall SAX rating of 3 with the human inhalation TCLo:39 $mg/m^3/20m$. Cadmium has been reported as an experimental carcinogen with an oral toxicity of its compounds reportedly high. Fatal poisoning does not occur as a rule because the irritation and emetic action are so violent that little cadmium is absorbed. Cases of cadmium poisoning are generally as a result of ingestion of food or beverages prepared or stored in cadmium plated containers. The inhalation of fumes or dust of cadmium primarily affects the respiratory tract. Kidneys may also be affected.

Chromic acid salts are known to have a corrosive action on the skin and mucus membranes. Lesions are usually confined to the exposed parts of the body, chiefly the skin in the hands and forearms and the mucus membrane of the nasal septum. Chromate salts are experimental and human carcinogens of the lungs, nasal cavities, paranasal sinus, and also experimental carcinogens of the stomach and larnyx. Hexavalent chromium compounds are known to be more toxic than the trivalent.

Lead is a cumulative poison. Increasing amounts build up in the body, and eventually a point is reached where symptoms and disability occur. The lead produces a brittleness of red blood cells to which they hemolyze with but slight trauma; the hemoglobin is not affected. The presence of lead-bearing materials or lead compounds in industrial plants does not necessarily result in exposure on the part of workmen. The lead must be in such a form and so distributed as to gain entrance into the body or tissues in measurable quantities. Otherwise, no exposure can be said to exist. Three

modes of entry are reported into the body: (1) by inhalation of dust fumes, mists of vapors; (2) by ingestion of lead compounds trapped in the upper respiratory tract or introduced into the mouth on food, tobacco, fingers, or other objects; and (3) through the skin. This route is of special importance in the case of organic compounds of lead such as tetra ethyl lead. The toxicity of various lead compounds appears to depend on several factors: (1) the solubility of the compound in the body fluids; (2) the fineness of the particles of the compound; solubility is greater in proportion to the fine mist of the particles; (3) conditions under which the compound is being used.

7.0 CONCLUSIONS AND RECOMMENDATIONS

There are four distinct areas on the plant site where waste material is evident. The largest of these areas are located immediately to the east and immediately to the west of the plant manufacturing operations. The total area comprised in these disposal sites is approximately 18 acres. The 1.5 acre site located by the water treatment plant is actually two distinct areas. One is located north of this treatment plant and the other is located to the west of the treatment plant.

The following heavy metals were determined: cadmium, chromium, and lead. Of these, cadmium and lead were determined to be present in levels significantly higher than the background sample. Cadmium levels in this material ranged in the vicinity of 5 ppm. Leachable cadmium was determined to be present in quantities less than 0.1 mg/l. Analysis for total lead indicated its presence in concentrations ranging from 500 to 2,300 ppm. The largest concentrations of lead were found in the 13.5 and 2.6 acre disposal site. EP-toxicity analysis indicated leachable lead in quantities at approximately 0.7 mg/l. Each of the disposal areas appeared to be covered with vegetation. This vegetation was typified by kudzu and shallow root system plants. At this time, the depth of the disposal area is unknown. Past information indicates the approximate depths are from 8-12 feet. Although these areas are covered in vegetation, the acreage involved appears to be easily determined as material is evident at the surface. Further work is recommended in order to determine the depth of the material and whether the material at the base of the disposal site displays the characteristics of EP-toxicity. Any potential environmental impact is unknown at this time.

EXHIBITS

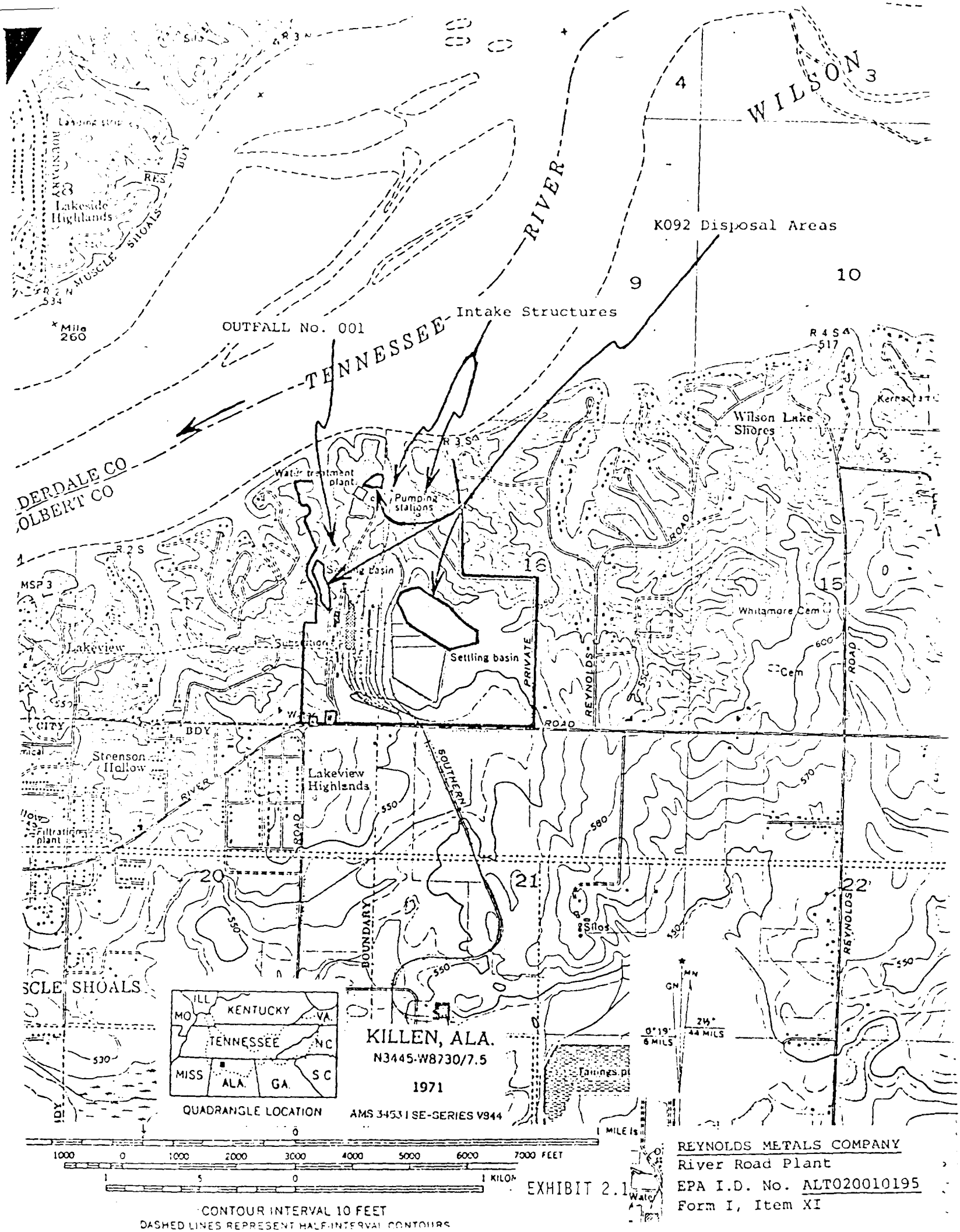

EXHIBIT 2.1

REYNOLDS METALS COMPANY
River Road Plant
EPA I.D. No. ALT020010195
Form I, Item XI

EPA I.D. No. ALT020010195
Form 3, Item V.

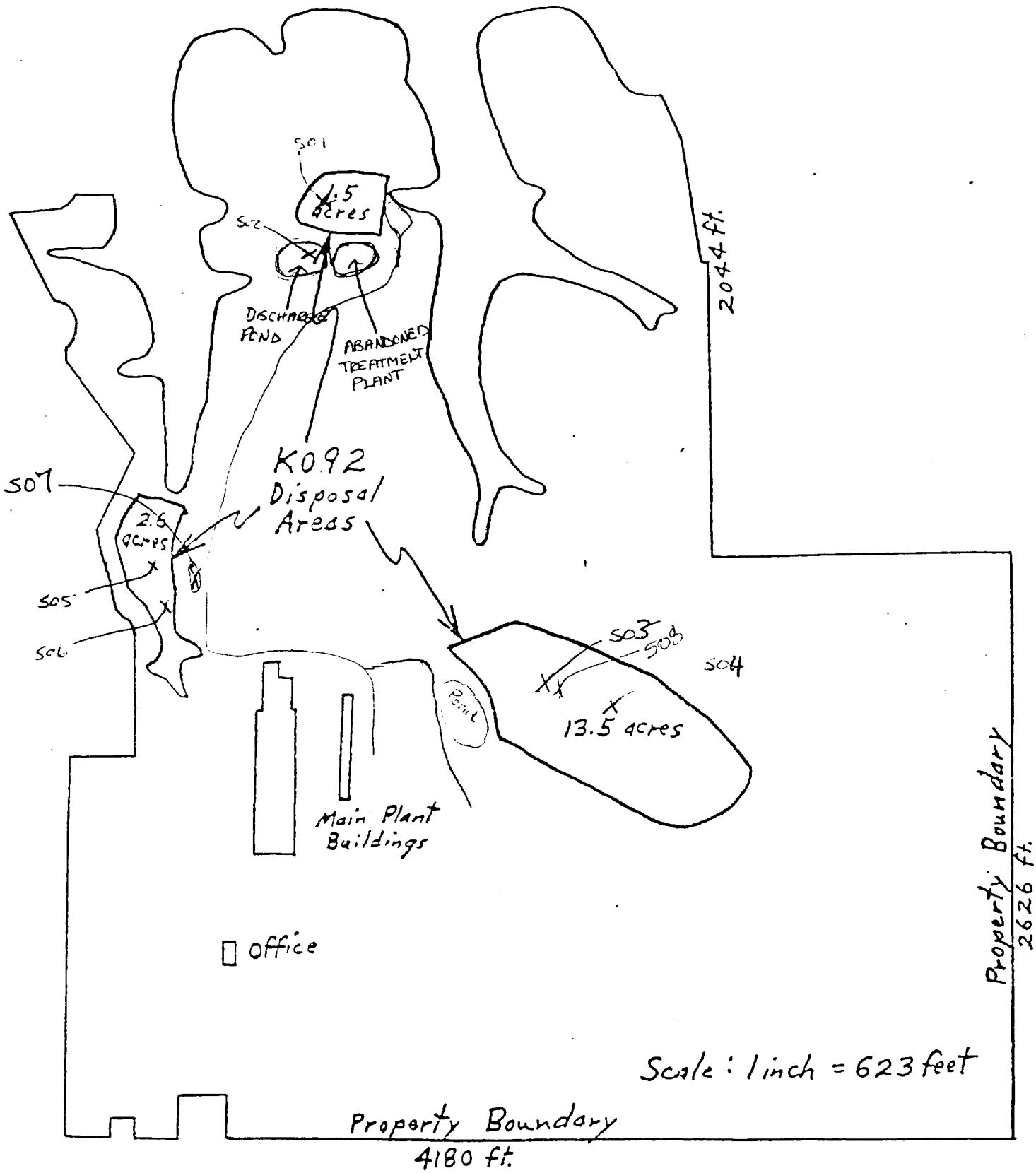

EXHIBIT 2.2

ENVIRONMENTAL PROTECTION SYSTEMS, INC.

P. O. Box 20382
106 Upton Dr
Jackson, Ms 39209
601 922 8242

7215 Pine Forest Rd
Pensacola, Fl 32506
904 944 0301

ANALYTICAL REPORT

Date: March 12, 1985

Site: Reynolds Metals Company
River Road Plant
Muscle Shoals, Alabama

Matrix: Soil

Client: Alabama Department of Environmental Management

Date Received: January 18, 1985

EPS Lab No.	EPS Field Identification
85010282	RE-S01-LA
85010283	RE-S02-LA
85010284	RE-S03-SB
85010285	RE-S04-SB
85010286	RE-S05-LA
85010287	RE-S06-LA
85010288	RE-S07-AS
85010289	RE-S08-LA

Attached sheets list results of our analysis of above samples for: Cadmium, Chromium, Lead, and Cyanide

Analytical Reference No.: 85.1.355

EXHIBIT 5.1

Albert A. Johnston
Associate Director of Analytical Services

ENVIRONMENTAL PROTECTION SYSTEMS, INC.

P. O. Box 20382
106 Upton Dr
Jackson, Ms. 39209
601 922 8242

7215 Pine Forest Rd
Pensacola, Fl. 32506
904 944-0301

ANALYTICAL REPORT

Date: March 12, 1985

Site: Reynolds Metals Company
River Road Plant
Muscle Shoals, Alabama

Matrix: Soil

Client: Alabama Department of Environmental Management

Date Received: January 18, 1985

Spiking and Recovery Data

EPS Lab No. 85010290

Parameter	Spiking Level (ppm)	Percent (%) Recovery
Cadmium	5.0	100.7
Chromium	5.0	108.0
Lead	20.0	102.3
Cyanide	0.60	82.0

Herbert A. Johnston

Associate Director of Analytical Services

ENVIRONMENTAL PROTECTION SYSTEMS, INC.

P.O. Box 20382 • 160 Upton Drive • Jackson, MS 39209
Telephone: (601) 922-8242

7215 Pine Forest Road • Pensacola, FL 32506
Telephone: (904) 944-0301

LABORATORY REPORT

85.1.355 | 1/2

CLIENT: Alabama Dept. of Environmental Mgmt.
LOCATION: Mongomery, Alabama
DATE: 03/13/85
INVOICE NO.: To be invoiced/bp

COLLECTED BY: EPS (174)
DATE COLLECTED: 01/15/85
DATE RECEIVED: 01/18/85
DATE ANALYZED: 03/12/85

LABORATORY SAMPLE IDENTIFICATION

85010282 - RE - S01 - LA
85010283 - RE - S02 - LA
85010284 - RE - S03 - SB
85010285 - RE - S04 - SB

ANALYSES	IDENTIFICATION NUMBER 282	283	284	285
Cadmium, Total, mg/kg	5.5	5.5	7.1	5.0
Cadmium, "EP Toxicity" Leachate, mg/l	0.08	0.08	0.09	0.06
Chromium, Total, mg/kg	17.8	15.0	52.0	53.0
Chromium, "EP Toxicity" Leachate, mg/l	0.07	0.07	0.07	0.03
Lead, Total, mg/kg	813	541	1,230	1,570
Lead, "EP Toxicity" Leachate, mg/l	0.72	0.69	0.73	0.59
Cyanide, Total, mg/kg	4.8	5.9	7.9	11.5
"EP Toxicity" Extraction	yes	yes	yes	yes

COMMENT

Analyses conducted in accordance with 40 CFR, Part 261, May, 1980, Test Methods for Evaluating Solid Waste. Metal analysis reported on a dry weight basis. All samples collected under RCRA 3012 Program at Reynolds Metals Co., River Road Plant, Muscle Shoals, Alabama.

CERTIFICATION

Jennie K. White
MANAGER, CHEMICAL LABORATORY

Herbert A. Johnston
DIRECTOR, ANALYTICAL SERVICES

ENVIRONMENTAL PROTECTION SYSTEMS, INC.

P.O. Box 20382 • 160 Upton Drive • Jackson, MS 39209
Telephone: (601) 922-8242

7215 Pine Forest Road • Pensacola, FL 32506
Telephone (904) 944-0301

LABORATORY REPORT

85,1,355 | 2/2

CLIENT: Alabama Dept. of Environmental Mgmt.
LOCATION: Montgomery, Alabama
DATE: 03/13/85
INVOICE NO.: To be invoiced/bp

COLLECTED BY: EPS (174)
DATE COLLECTED: 01/15/85
DATE RECEIVED: 01/18/85
DATE ANALYZED: 03/12/85

LABORATORY SAMPLE IDENTIFICATION

85010286 - RE - S05 - LA
85010287 - RE - S06 - LA
85010288 - RE - S07 - AS
85010289 - RE - S08 - LA

ANALYSES	IDENTIFICATION NUMBER 286	287	288	289
Cadmium, Total, mg/kg	5.2	4.7	0.9	5.5
Cadmium, "EP Toxicity" Leachate, mg/l	0.09	0.02	0.01	0.08
Chromium, Total, mg/kg	25.7	52.5	22.8	64.6
Chromium, "EP Toxicity" Leachate, mg/l	0.04	<0.01	<0.01	0.06
Lead, Total, mg/kg	2,170	2,250	28.8	1,052
Lead, "EP Toxicity" Leachate, mg/l	0.71	0.15	<0.10	0.74
Cyanide, Total, mg/kg	1.2	8.4	2.5	4.4
"EP Toxicity" Extraction	yes	yes	yes	yes

COMMENT

Analyses conducted in accordance with 40 CFR, Part 261, May, 1980, Test Methods for Evaluating Solid Waste. Metal analysis reported on a dry weight basis. All samples collected under RCRA 3012 Program at Reynolds Metals Co., River Road Plant, Muscle Shoals, Alabama.

CERTIFICATION

Jeanie K. Whit
MANAGER, CHEMICAL LABORATORY

Herbert A. Johnston
DIRECTOR, ANALYTICAL SERVICES

Receipt for Samples
RCRA 3012 Hazardous Waste Site Inventory

Name of Facility/Site: [illegible]

Facility/Site Location: [illegible]

Samplers: [illegible]

Date: [illegible]

Split Samples Offered: X accepted ____ declined

	Station No.	Time	Composite	Grab	Station Description	No. of Containers	Remarks
1.	GT-S01-PB	9:45	X		[illegible]	3	AE, BN, VOA, Pb
2.	[illegible]	11:20	X		(LARGER - BY ROAD 2½-4')	3	"
3.	[illegible]	2:25	X		(SMALL [illegible] 2-4')	3	"
4.	GT [illegible] - SI	11:30	X		SURFACE IMPOUNDMENT (4½-5 ft - OILY MATERIAL)	3	"
5.	GT [illegible] - DP	10:38	X		[illegible] 1-P	2	AE, BN, VOA
6.	GT [illegible] DP	3:45	X		[illegible] 2 (ON HILL BX NOT [illegible])	2	"
7.	GT-S07-DP	—	—		[illegible]	0	—
8.	GT-S08-FR	3:10	X		FIELD REPLICATE OF GT-S03-SI (CORE 2' FROM 1st BORING)	2	"
9.							
10.							

Receipt Transferred by: Donalea Dinsmore

Date: 1-17-85

Time: 4:10

Receipt Received by: John R. Burton Jr

Telephone: 205-546-6341 [illegible]

Title: [illegible]

Date: 1-17-85

Time: 4:[illegible] P.M.

CADMIUM COMPOUNDS

NIOSH #: EV 0260000

TOXICITY DATA: 3 CODEN:
ihl-hmn TCLo:1500 ug/m3/14Y-1:CARC ANYAA9 271,273,76

Toxicology Review: STEVA8 2(4),341,74. Occupational Exposure to Cadmium recm std: Air: TWA 40 ug/m3; CL 200 ug/m3/15M NTIS**.

THR: An exper CARC. The oral toxicity of Cd and its compounds is HIGH. However, when these materials are ingested, the irr and emetic action is so violent that little of the Cd is absorbed and fatal poisoning does not as a rule ensue. Cases of human Cd poisoning have been reported from ingestion of food or beverages prepared or stored in Cd-plated containers. The inhal of fumes or dusts of Cd primarily affects the respiratory tract; the kidneys may also be affected. Even brief exposure to high conc may result in pulmonary edema and death. Usually the edema is not massive, with little pleural effusion. In fatal cases, fatty degeneration of the liver and acute inflammatory changes in the kidneys have been noted. Ingestion of Cd results in a gastrointestinal type of poisoning resembling food poisoning in its symptoms. Inhal of dust or fumes may cause dryness of the throat, cough, headache, a sense of constriction in the chest, shortness of breath (dyspnea) and vomiting. More severe exposure results in marked lung changes, with persistent cough, pain in the chest, severe dyspnea and prostration which may terminate fatally. X-ray changes are usually similar to those seen in broncho-pneumonia. The urine is frequently dark. These symptoms are usually delayed for some hours after exposure, and fatal conc may be breathed without sufficient discomfort to warn the workman to leave the exposure. There is some evidence of teratogenicity. Ingestion of Cd results in sudden nausea, salivation, vomiting and diarrhea and abdominal pain and discomfort. Symptoms begin almost immediately after ingestion. A yellow discoloration of the teeth has been reported in workers exposed to Cd. Cadmium oxide fumes can cause metal fume fever resembling that caused by zinc oxide fumes.

CADMIUM DIAMIDE

mf: CdH_4N_2; mw: 144.45

Incomp: Self-explodes (water).

CADMIUM DIAZIDE

mf: CdN_6; mw: 196.44

Incomp: Explodes violently.

CADMIUM DICYANIDE

mf: C_2CdN_2; mw: 164.44

Incomp: Magnesium.

CADMIUM (II) EDTA COMPLEX

CAS RN: 15954913 NIOSH #: AH 4060000

SYN: (ETHYLENEDINITRILO)TETRAACETIC ACID CADMIUM (II) COMPLEX

TOXICITY DATA: 3 CODEN:
ipr-mus LD50:7800 ug(Cd)/kg PABIAQ 11,853,63

Occupational Exposure to Cadmium recm std: Air: TWA 40 ug/m3; CL 200 ug/m3/15M NTIS**.

THR: HIGH ipr. See also cadmium compounds.

Disaster Hazard: When heated to decomp it emits tox fumes of NO_x and Cd.

CADMIUM FLUOBORATE

CAS RN: 14486192 NIOSH #: EV 0525000
mf: B_2CdF_8; mw: 286.02

SYN: FLUOROBORATE

TOXICITY DATA: 3 CODEN:
orl-rat LDLo:250 mg/kg NCNSA6 5,27,53
ihl-mus LCLo:650 mg/m3/10M NDRC** No.9-4-1-19,44

Occupational Exposure to Cadmium recm std: Air: TWA 40 ug/m3; CL 200 ug/m3/15M NTIS**. Reported in EPA TSCA Inventory, 1980.

THR: HIGH orl. MOD ihl. See fluoborates.

Disaster Hazard: When heated to decomp it emits very tox fumes of Cd and F^-.

For further information see Fluoroborate Vol. 2, No. 3 of *DPIM Report.*

CADMIUM FLUORIDE

CAS RN: 7790796 NIOSH #: EV 0700000
mf: CdF_2; mw: 150.40

Cubic white crystals. mp: 1100°, bp: 1758°, d: 6.64, vap. press: 1 mm @ 1112°.

SYN: CADMIUM FLUORURE (FRENCH)

TOXICITY DATA: 3 CODEN:
scu-frg LDLo:280 mg/kg CRSBAW 124,133,37

Toxicology Review: AMSSAQ 400,5,63. OSHA Standard: Air: TWA 200 ug(Cd)/m3; CL 600 (SCP-W) FEREAC 39,23540,74. Occupational Exposure to Cadmium recm std: Air: TWA 40 ug/m3; CL 200 ug/m3/15M NTIS**. Reported in EPA TSCA Inventory, 1980.

THR: HIGH via scu route. Violent reaction with K. See fluorides and cadmium compounds.

Disaster Hazard: When heated to decomp it emits very tox fumes of Cd and F^-.

CADMIUM FLUOSILICATE

CAS RN: 17010218 NIOSH #: EV 0875000
mf: CdF_6Si; mw: 254.49

Hexagonal, colorless crystals.

SYN: TL 1070

TOXICITY DATA: 3 CODEN:
orl-rat LDLo:100 mg/kg NCNSA6 5,27,53
ihl-mus LCLo:670 mg/m3/10M NDRC** No.9-4-1-19,44

Occupational Exposure to Cadmium recm std: Air: TWA 40 ug/m3; CL 200 ug/m3/15M NTIS**.

EXHIBIT 6.0

TOXICITY DATA:
Currently tested by NTP for carcinogenesis by standard bioassay protocol as of December 1980.
THR: No data. Under CARC test.
Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

CADMIUM

CAS RN: 7440439 NIOSH #: EU 9800000
mf: Cd; mw: 112.40

Hexagonal crystals, silver-white malleable metal. mp: 320.9°, bp: 767 ± 2°, d: 8.642, vap. press: 1 mm @ 394°.

SYNS:
C.I. 77180 KADMIUM (GERMAN)

TOXICITY DATA: 3	CODEN:
ivn-rat TDLo:1250 ug/kg/(9D preg):TER	EVHPAZ 28,245,79
ipr-mus TDLo:2248 ug/kg/(8D preg):TER	TJADAB 13,33A,76
ivn-ham TDLo:2 mg/kg/(8D preg):TER	EXPEAM 25,56,69
ims-rat TDLo:45 mg/kg/4W-I:NEO	NCIUS* PH-43-64-886,SEPT,71
ims-rat TD:70 mg/kg:ETA	BJCAAI 18,124,64
ims-rat TD:63 mg/kg:ETA	NATUAS 193,592,62
ihl-man TCLo:88 ug/m3/8.6Y:SYS	AEHLAU 28,147,74
ihl-hmn LCLo:39 mg/m3/20M	AIHAAP 31,180,70
unk-man LDLo:15 mg/kg	85DCAI 2,73,70
orl-rat LD50:225 mg/kg	TXAPA9 41,667,77
ipr-rat LD50:4 mg/kg	TXAPA9 41,667,77
scu-rat LD50:9 mg/kg	TXAPA9 41,667,77
ivn-rat LD50:3 mg/kg	TXAPA9 41,667,77
unk-rat LD50:712 mg/kg	GTPZAB 22(5),6,78
unk-mus LD50:636 mg/kg	GTPZAB 22(5),6,78
orl-rbt LDLo:70 mg/kg	AMPMAR 34,127,73
scu-rbt LDLo:6 mg/kg	PROTA* -,-,55
ims-ham LDLo:25 mg/kg	NCIUS* PH-43-64-886
cyt-ham:ovr 1 umol/L	CGCGBR 26,251,80
ipr-rat TDLo:1124 ug/kg (1D male)	TXAPA9 41,194,77
scu-rat TDLo:250 ug/kg (19D preg)	APTOD9 19,A122,80
orl-mus TDLo:448 mg/kg (MGN)	AEHLAU 23,102,71

Carcinogenic Determination: Animal Positive IARC** 2,74,73.
TLV: Air: 0.05 mg/m3 DTLVS* 4,59,80; TRBMAV 33(1),85,75; JDSCAE 58(12),1767,75; JFDSAZ 39,321,74; AMBOCX 3(2),55,74; QURBAW 7(1), 75,74; AEMBAP 40,239,73; NTIS** PB-221,198; KOTTAM 11(11),1300,75; FOREAE 7,313,42; STEVA8 2(4),341,74; FCTXAV 9,105,71; AJMEAZ 38,409,65; ENVRAL 4,71,71; 85CVA2 5,63,70; PEXTAR 12,102,69; PDTNBH 6,204,77; BNYMAM 54,413,78; AMTODM 3,209,77; GSAMAQ 123, 109,71. OSHA Standard: Air: TWA 200 ug/m3; CL 600 (SCP-W) FEREAC 39,23540,74. Occupational Exposure to Cadmium recm std: Air: TWA 40 ug/m3; CL 200 ug/m3/15M NTIS**. "NIOSH Manual of Analytical Methods" VOL 1 191,223,224, VOL 3 S312, S313, VOL 5 173#. Reported in EPA TSCA Inventory, 1980.
THR: MUT data. An exper TER, NEO, ETA, CARC. A human SYS. HIGH hmn ihl, unk. HIGH orl, ipr, scu, ivn, ims. MOD unk. See also cadmium compounds.
Fire Hazard: Mod, in the form of dust when exposed to heat or flame or by chemical reaction with oxidizing agents, metals, HN_3, Zn, Se and Te.
Explosion Hazard: Mod, in the form of dust when exposed to flame.
Disaster Hazard: Dangerous; cadmium dust can react vigorously with oxidizing materials.
For further information see Vol. 1, No. 1 and Vol. 3, No. 5 of *DPIM Report.*

CADMIUM (II) ACETATE

CAS RN: 543908 NIOSH #: EU 9810000
mf: $C_2H_4O_2 \cdot 1/2Cd$; mw: 116.25

Monoclinic colorless crystals, odor of acetic acid. mp: 256°, bp: decomp, d: 2.341.

SYNS:
BIS(ACETOXY)CADMIUM C.I. 77185
CADMIUM DIACETATE

TOXICITY DATA: 3	CODEN:
otr-ham:emb 1 umol/L	CNREA8 39,193,79
dnd-ham:emb 1 umol/L	CNREA8 39,193,79
ipr-mus LD50:14 mg/kg	TXAPA9 49,41,79
cyt-hmn:lym 10 nmol/L	MUREAV 85,236,81
ipr-rat TDLo:2371 ug/kg (14D preg)	BECTA6 20,206,78
ipr-rat TDLo:1 mg/kg (14D preg)	BECTA6 23,25,79
ipr-rat TDLo:2 mg/kg (20D preg)	BECTA6 23,25,79

Reported in EPA TSCA Inventory, 1980.
THR: MUT data. HIGH ipr. See also cadmium compounds.
Disaster Hazard: When heated to decomp it emits tox fumes of Cd.

CADMIUM BIS(2-ETHYLHEXYL) PHOSPHITE

CAS RN: 7495934 NIOSH #: TG 6475000
mf: $C_{32}H_{68}O_6P_2 \cdot Cd$; mw: 723.34

SYN: PHOSPHORUS ACID, BIS(2-ETHYLHEXYL) ESTER, CADMIUM SALT

TOXICITY DATA: 3	CODEN:
ipr-mus LDLo:250 mg/kg	CBCCT* 7,790,55

Occupational Exposure to Cadmium recm std: Air: TWA 40 ug/m3; CL 200 ug/m3/15M NTIS**.
THR: HIGH ipr. See also cadmium compounds.
Disaster Hazard: When heated to decomp it emits tox fumes of PO_x and Cd.

CADMIUM CAPRYLATE

CAS RN: 2191108 NIOSH #: RH 0370000
mf: $C_{16}H_{30}O_4 \cdot Cd$; mw: 398.86

SYN: OCTANOIC ACID, CADMIUM SALT (2:1)

TOXICITY DATA: 3-2	CODEN:
orl-rat LD50:950 mg/kg	JHEMA2 18,144,74
itr-rat LDLo:10 mg/kg	JHEMA2 18,144,74
orl-mus LD50:300 mg/kg	JHEMA2 18,144,74

Occupational Exposure to Cadmium recm std: Air: TWA 40 ug/m3; CL 200 ug/m3/15M NTIS**. Reported in EPA TSCA Inventory, 1980.

OSH #: GB 2650000

; decomp @ 250° to
Water sol.

AIC ANHYDRIDE

CODEN:
EREAC 41,57018,76.
) recm std: Air: TWA
3/15M NTIS**.
compounds and chro-
yes and mu mem; can
ima, "chrome holes,"

a fire.
lride; tetrahydronaph-
metals; ammonia; ar-
butyric acid; n,n-di-
sulfide; peroxyformic
exacyanoferrate; pyri-

OSH #: GB 2670000

CODEN:
Corrosive FEREAC
osure to Cr(VI) recm
3;CL 50 ug/m3/15M

also chromium com-

ATE

OSH #: GB 7280000

0800
ATO-CHROMIC CHLORIDE
PLEX

CODEN:
SLNX* NX#03305

, 1980.
um compounds.
decomp it emits tox

OSH #: GB 2850000

SYNS:
CHROMIC ACID, CHROMIUM (3+) SALT (3:2) — CHROMIUM CHROMATE

TOXICITY DATA: 3 — CODEN:
imp-rat TDLo:112 mg/kg:NEO — AIHAAP 20,274,59

Carcinogenic Determination: Animal Positive IARC** 2,100,73. Occupational Exposure to Chromium(VI) recm std: Air: CL 1 ug(Cr(VI))/m3 NTIS**. Reported in EPA TSCA Inventory, 1980.
THR: An exper NEO, CARC. See also chromium compounds. Very powerful oxidizer.

CHROMITE (MINERAL)

CAS RN: 1308312 — NIOSH #: GB 4000000
mf: Cr_2FeO_4; mw: 223.85

SYNS:
CHROME ORE — IRON CHROMITE
CHROMITE ORE

TOXICITY DATA: 3 — CODEN:
Carcinogenic Determination: Indefinite IARC** 23,205,80.
THR: See also chromium compounds and iron. An exper ± CARC.

CHROMIUM

CAS RN: 7440473 — NIOSH #: GB 4200000
Af: Cr; Aw: 52.0

SYN: CHROME

TOXICITY DATA: — CODEN:
ivn-rat TDLo:2160 ug/kg/6W-1 TFX:ETA — JNCIAM 16,447,55
imp-rat TDLo:1200 ug/kg/6W-1 TFX:ETA — JNCIAM 16,447,55
imp-rbt TDLo:75 mg/kg:ETA — ZEKBAI 52,425,42

Carcinogenic Determination: Animal Suspected IARC** 2,100,73; Animal Indefinite IARC** 23,205,80. TLV: TWA 500 ug/m3 DTLVS* 4,98,80. *Toxicology Review* 85CVA2 5,63,70; KOTTAM 11(11),1300,75; FOREAE 7,313,42; MIBUBI 9(4),321,75; FCTXAV 9,105,71; PEXTAR 12,102,69; 85DHAX Cr,22,74; BNYMAM 54,413,78; NTIS** Conf-691001. OSHA Standard: Air: TWA 1 mg/m3 (SCP-0) FEREAC 39,23540,74. "NIOSH Manual of Analytical Methods" VOL 1 152,182, VOL 3; S323,352, VOL 5 173#; NIOSH Current Intelligence Bulletin 4, 1975. Reported in EPA TSCA Inventory, 1980. Proposed OSHA Medical Records Rules FEREAC 47,30420,82.
THR: An exper ETA, CARC.
Disaster Hazard: Powder will explode spont in air.
Incomp: Oxidants.
For further information see Vol. 3, No. 3 of *DPIM Report*.

CHROMIUM ACETATE HYDRATE

CAS RN: 628524 — NIOSH #: AG 3000000
mf: $C_4H_6CrO_4 \cdot H_2O$; mw: 188.12

Red crystals.

SYNS:
ACETIC ACID, CHROMIUM(2+) SALT — CHROMIUM(II) ACETATE
CHROMIUM(2+) ACETATE — CHROMIUM DIACETATE
CHROMOUS ACETATE

TOXICITY DATA: 1 — CODEN:
orl-rat LD50:11260 mg/kg — AIHAAP 30,470,69

Reported in EPA TSCA Inventory, 1980.
THR: LOW orl. See also chromium compounds.
Disaster Hazard: When heated to decomp it emits acrid smoke and irr fumes.

CHROMIUM(III) CHLORIDE

CAS RN: 10025737 — NIOSH #: GB 5425000
mf: Cl_3Cr; mw: 158.36

Bp: 1300° (subl).

SYNS:
CHROMIC CHLORIDE — C.I. 77295
CHROMIUM CHLORIDE, ANHYDROUS — PURATRONIC CHROMIUM CHLORIDE
CHROMIUM CHLORIDE — TRICHLOROCHROMIUM
CHROMIUM TRICHLORIDE

MUTAGEN DATA: 3 — CODEN:
dnd-esc 5 mmol/L — CNREA8 40,2455,80
cyt-hmn:fbr 100 umol/L — CARYAB 32,379,79
cyt-ham:ovr 50 ug/L — CARYAB 32,379,79

REPRODUCTIVE EFFECTS DATA:
ifi-rat TDLo:12668 ug/kg (1D male) — JRPFA4 7,21,64
ipr-mus TDLo:44600 ug/kg (8D preg) — JTSCDR 2,1,76
ipr-mus TDLo:30 mg/kg (8D preg) — JTSCDR 2,1,76
ipr-mus TDLo:59500 ug/kg (9D preg) — JTSCDR 2,1,76
scu-mus TDLo:450 mg/kg (1-17D preg) — TJADAB 12,198,75
scu-mus TDLo:12668 ug/kg (30D male) — JRPFA4 7,21,64

TOXICITY DATA: — CODEN:
orl-rat LD50:1870 mg/kg — AIHAAP 30,470,69
ipr-mus LD50:140 mg/kg — COREAF 256,1043,63
ivn-mus LDLo:400 mg/kg — AQMOAC #70-15,1970
ivn-rbt LDLo:288 mg/kg — EQSSDX 1,1,75
skn-grg LDLo:202 mg/kg — AEHLAU 11,201,65
ipr-gpg LDLo:200 mg/kg — AEHLAU 11,201,65

Toxicology Review: 85DHAX Cr,22,74. Reported in EPA TSCA Inventory, 1980. Meets Criteria for Proposed OSHA Medical Records Rule FEREAC 47,30420,82.
THR: HIGH dermal; MOD orl. Violent reaction with Li, nitrogen.
Disaster Hazard: When heated to decomp it emits tox fumes of Cl^-.

CHROMIUM COMPOUNDS

Chromic acid and its salts have a corrosive action on the skin and mu mem. The lesions are confined to the exposed parts, affecting chiefly the skin of the hands and forearms and the mu mem of the nasal septum. The characteristic lesion is a deep, penetrating ulcer, which, for the most part, does not tend to suppurate, and which is slow in healing.

Small ulcers, about the size of a matchhead or end of a lead pencil may be found, chiefly around the base of the nails, on the knuckles, dorsum of the hands and forearms. These ulcers tend to be clean, and progress slowly. They are frequently painless, even though quite deep. They heal slowly, and leave scars. On the mu mem of the nasal septum the ulcers are usually accompanied by purulent discharge and crusting. If exposure continues, perforation of the nasal septum may result, but produces no deformity of the nose. Chromate salts are exper and hmn CARC of the lungs, nasal cavity and paranasal sinus, also exper CARC of the stomach and larynx. Hexavalent compounds are said to be more toxic than the trivalent. Eczematous dermatitis due to trivalent chromium compounds has been reported.

CHROMIUM DIACETATE

CAS RN: 628524 — NIOSH #: AG 3000000
mf: $C_4H_6CrO_4$; mw: 170.09

SYNS:
ACETIC ACID, CHROMIUM (2+) SALT (8Cl,9Cl) — CHROMIUM (2+) ACETATE
CHROMIUM ACETATE HYDRATE — CHROMIUM (II) ACETATE
CHROMOUS ACETATE

TOXICITY DATA: 1 — CODEN:
orl-rat LD50:11260 mg/kg — AIHAAP 30,470,69

THR: LOW orl. See also chromium compounds.
Disaster Hazard: Ignites spont in air.

CHROMIUM(VI) OXIDE (1:3)

CAS RN: 1333820 — NIOSH #: GB 6650000
mf: CrO_3; mw: 100.00

Red rhomb, deliq cryst.; d: 2.70; mp: 196°; bp: decomp sol = 61.7 g/100 cc @ 0°; 67.45 g/100 cc @ 100°.

SYNS:
ANHYDRIDE CHROMIQUE (FRENCH) — CHROMIUM TRIOXIDE
ANIDRIDE CROMICA (ITALIAN) — CHROMIUM (6+) TRIOXID
CHROME (TRIOXYDE DE) (FRENCH) — CHROMSAEUREANHYDRID (GERMAN)
CHROMIC ACID; CHROMIC (VI) ACID — CHROMTRIOXID (GERMAN)
CHROMIC ACID, SOLID; CHROMIC ACID, SOLID (DOT) — CHROOMTRIOXYDE (DUTCH)
CHROMIC ANHYDRIDE — CHROOMZUURANHYDRIDE (DUTCH)
CHROMIC ANHYDRIDE (DOT) — CHROMO (TRIOSSIDO DI) (ITALIAN)
CHROMIC TRIOXIDE; CHROMIC TRIOXIDE (DOT) — MONOCHROMIUM OXIDE)
CHROMIUM OXIDE; CHROMIUM (VI) OXIDE — MONOCHROMIUM TRIOXIDE
PURATRONIC CHROMIUM TRIOXIDE

TOXICITY DATA: — CODEN:
mmo-sat 1 mmol/L — TOLEDS 8,195,81
mma-sat 10 ug/plate — AEMIDF 33,805,77
dnd-esc 5 mmol/L — CNREA8 40,2455,80
mrc-bsc 16 mmol/L — MUREAV 58,175,78
cyt-mus:mml umol/L/48H — MUREAV 67,221,79
cyt-ham:emb 3500 ug/L/24H — MUREAV 46,87,77
cyt-ham:ovr 250 ug/L — TXCYAC 17,219,80
sce-ham:ovr 250 ug/L — TXCYAC 17,219,80
ivn-ham TDLo:5 mg/kg (8D preg) — ENVRAL 16,101,78
ivn-ham TDLo:7500 ug/kg (8D preg) — ENVRAL 16,101,78
ivn-ham TDLo:7500 ug/kg (8D preg) — TJADAB 9,A17,74
ihl-ham TCLo:110 ug/m³:CAR — AGGHAR 13,528,55
imp-rat TDLo:125 mg/kg:CAR — AIHAAP 20,274,59
scu-dog LDLo:330 mg/kg — 27ZWAY 3,3,1521

M-LAURYL MERCAPTAN
1-MERCAPTODODECANE
NCI-C60935

CODEN:
BZARAZ 27,102,74

ntory, 1980.
data.

d to decomp it emits tox

JRYLXANTHATE

NIOSH #: UU 5775000
: 509.98

C
28ZP .74,72
28ZPAK .,174,72
28ZPAK .,174,72

to decomp it emits very

I SALT, CONDENSED
'LENE OXIDE

NIOSH #: OF 5725000

IUM SALT OF SULFATED
THOXYLATE OF BROAD-CUT
AURYL ALCOHOL

CODEN:
JSCCA5 22,411,71
JSCCA5 22,411,71
JSCCA5 22,411,71

o decomp it emits tox

IOSH #: OF 6097500

nd in plant Lavanoula
team distillation of the

CODEN:
CTXAV 14,443,76
, 1980.

decomp it emits acrid

OSH #: OF 6097840
se.

TOXICITY DATA:
mma-sat 25 ug/plate

CODEN:
TOLED5 3,325,79

THR: MUT data.
Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

LAVENDER ABSOLUTE

NIOSH #: OF 6100000

Found in the flowers of Lavandula Officinalis chaix. The main constituent is Linalyl Acetate; prepared from alcoholic extract of a residue, which is extracted from plant material using an organic solvent; a dark green liquid.

TOXICITY DATA: 1
skn-rbt 500 mg/24H MLD
orl-rat LD50:4250 mg/kg

CODEN:
FCTXAV 14,443,76
FCTXAV 14(5),443,76

THR: LOW orl; A skn irr.
Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

LAVENDER OIL

CAS RN: 8000280 NIOSH #: OF 6110000

Main constituent is linalyl acetate. Found in the plant Lavandulaofficinalif choix (Fam. Labiate). Prepared by steam distillation of the flowering stalks of the plant.

SYNS:
LAVENDEL OEL (GERMAN)
OIL OF LAVENDER

TOXICITY DATA: 1
skn-rbt 500 mg/24H MLD
orl-rat LD50:9040 mg/kg

CODEN:
FCTXAV 14,443,76
PHARAT 14,435,59

Reported in EPA TSCA Inventory, 1980.
THR: LOW orl. A skn irr.
Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

LD-813

CAS RN: 64083052 NIOSH #: OF 6730000

Commercial mixture of aromatic amines containing approx. 40% MOCA

TOXICITY DATA: 3
orl-rat TDLo:37 gm/kg/2Y-C:CARC

CODEN:
TXAPA9 31,159,75

THR: An exper CARC. See also aromatic amines.
Disaster Hazard: When heated to decomp it emits toxic fumes of NO_x.

LEAD

CAS RN: 7439921 NIOSH #: OF 7525000
mf: Pb; mw: 207.19

Bluish-gray, soft metal. mp: 327.43°, bp: 1740°, d: 11.34 @ 20°/4°. vap. press: 1 mm @ 973°.

SYNS:
C.I. 77575
LEAD FLAKE
LEAD 52
OLOW (POLISH)

TOXICITY DATA: 3
TDLo:790 mg/kg (MGN)
TDLo:1140 mg/kg (14D pre-
D post)
TDLo:1120 mg/kg (MGN)
TDLo:6300 mg/kg (1-21D
)
TDLo:12600 mg/kg (1-21D
)
TDLo:4800 mg/kg (1-16D
)
TDLo:50 mg/kg/(8D
):TER
TDLo:662 mg/kg (1-21W
)
TDLo:50 mg/kg/(8D
):TER
TDLo:450 mg/kg/6Y:CNS
LDLo:1000 mg/kg
LDLo:160 mg/kg

CODEN:
AEHLAU 23,102,71
PHMCAA 20,201,78
AEHLAU 23,102,71
EXPEAM 31,1312,75
EXPEAM 31,1312,75
BECTA6 18,271,77
EXPEAM 25,56,69
TXAPA9 25,466,73
EXPEAM 25,56,69
JAMAAP 237,2627,77
EQSSDX 1,1,75
HBAMAK 4,1289,35

Carcinogenic Determination: Indefinite IARC** 23, 325,80.
TLV: AIR: 0.15 mg/m3 DTLVS* 4,243,80; *Toxicology Review:* TRBMAV 33(1),85,75; PGMJAO 51(601),783,75; JDSCAE 58(12),1767,75; IRXPAT 12,1,73; CTPHBG 55,147,71; CTOXAO 6(3),377,73; QURBAW 7(1),75,74; RREVAH 54,55,75; JAVMA4 164(3),277,74; AEMBAP 40,239,73; CTOXAO 5(2),151,72; FOREAE 7,313,42; KOTTAM 11(11),1300,75; GEIGAI 20(3),291,73; STEVA8 2(4),341,74; CLCHAU 19,361,73; AJMEAZ 38,409,65; 85DHAX PB,254,72; PDTNBH 6,204,77; AMTODM 3,209,77. OSHA Standard: Air: TWA 200 ug/m3 (SCP-O) FEREAC 39,23540,74. Occupational Exposure to Inorganic Lead recm std: Air: TWA 0.10 mg(Pb)/m3 NTIS**. "NIOSH Manual of Analytical Methods" VOL 1 102,191,195,200,208,214,262, VOL 3 S341. Reported in EPA TSCA Inventory, 1980.
THR: See lead compounds. A hmn CNS. HIGH orl; MOD irr. A common air contaminant. It is a ± CAR of the lungs and kidney and an exper TER.
Fire Hazard: Mod, in the form of dust when exposed to heat or flame. See also powdered metals.
Explosion Hazard: Mod, in the form of dust when exposed to heat or flame.
Incomp: NH_4NO_3, ClF_3, H_2O_2, NaN_3, Na_2C_2, Zr, disodium acetylide; oxidants.
Disaster Hazard: Dangerous; when heated, emits highly toxic fumes; can react vigorously with oxidizing materials.
For further information see Vol. 1, No. 1 of *DPIM Report.*

LEAD ACETATE

CAS RN: 301042 NIOSH #: AI 5250000
mf: $C_4H_6O_4 \cdot Pb$; mw: 325.29

Trihydrate, colorless crystals or white granules or powder. Slightly acetic odor; slowly effloresces; d: 2.55; mp: 75° when rapidly heated. Decomp above 200°; very sol in glycerol. Keep well closed.

SYNS:
ACETIC ACID LEAD (2+) SALT
ACETATE DE PLOMB (FRENCH)
BLEIACETAT (GERMAN)
LEAD (2+) ACETATE
LEAD(II) ACETATE
LEAD DIACETATE
LEAD DIBASIC ACETATE
NORMAL LEAD ACETATE
PLUMBOUS ACETATE
SALT OF SATURN
SUGAR OF LEAD

TOXICITY DATA: 3

	CODEN:
dns-rat-ipr 50 ug/kg	PSEBAA 143,446,73
spm-mus-par 1 gm/kg	ARTODN 46,159,80
orl-rat TDLo:7854 mg/kg (6-16D preg)	FCTXAV 13,629,75
orl-rat TDLo:1800 mg/kg (1-22D preg/14D post)	TOLED5 7,373,80
orl-rat TDLo:113 gm/kg (70D pre-21D post)	FBBHAU 8,347,78
orl-mus TDLo:3150 mg/kg (1-21D preg)	CRSBAW 170,1319,76
orl-mus TDLo:4800 mg/kg (1-8D preg)	CRSBAW 172,1037,78
orl-mus TDLo:9 gm/kg (7-21D preg)	CRSBAW 170,1319,76
ipr-mus TDLo:35 mg/kg (8D preg)	BIMDB3 30,223,79
ivn-ham TDLo:50 mg/kg/(8D preg):TER	EXMPA6 7,208,67
ivn-ham TDLo:50 mg/kg (8D preg)	EXPEAM 25,56,69
ipr-pgn LDLo:150 mg/kg	ARTODN 46,265,80
cyt-hmn:lym 1 mmol/L/24H	TXCYAC 10,67,78
cyt-mus-orl 16800 mg/kg/4W	JTEHD6 2,619,77
cyt-mky-orl 5760 mg/kg/64W	MUREAV 45,77,77
ipr-mus TDLo:15 mg/kg/(8D preg):TER	BIMDB3 30,223,79
ivn-ham TDLo:50 mg/kg/(8D preg):TER	EXMPA6 7,208,67
orl-rat TDLo:250 gm/kg/47W-C:ETA	BJCAAI 16,283,62
ipr-rat LDLo:204 mg/kg	JPETAB 38,161,30
ipr-mus LD50:120 mg/kg	COREAF 256,1043,63
orl-dog LDLo:300 mg/kg	HBAMAK 4,1289,35
scu-dog LDLo:80 mg/kg	HBAMAK 4,1289,35
ivn-dog LDLo:300 mg/kg	EQSSDX 1,1,75
scu-cat LDLo:100 mg/kg	HBAMAK 4,1289,35
scu-rbt LDLo:300 mg/kg	HBAMAK 4,1289,35
ivn-rbt LDLo:50 mg/kg	EQSSDX 1,1,75
scu-frg LDLo:1600 mg/kg	HBAMAK 4,1289,35

Carcinogenic Determination: Animal Positive IARC** 23,325,80; Human Suspected IARC** 23,325,80. *Toxicology Review:* ADTEAS 5,51,72; ENVRAL 13,36,77; 85DHAX Pb,256,72. OSHA Standard: Air: TWA 200 ug(Pb)/m3 (SCP-O) FEREAC 29,23540,74. Occupational Exposure to Inorganic Lead recm std: Air: TWA 0.10 mg(Pb)/m3 NTIS**. Reported in EPA TSCA Inventory, 1980.
THR: MUT data. An exper + CARC, TER, ETA. A susp hmn CARC; HIGH ipr, orl, scu, ivn. See also lead compounds. A poison. An insecticide.
Disaster Hazard: When heated to decomp it emits toxic fumes of Pb.
Incomp: $KBrO_3$; acids, sol sulfates, citrates, tartrates, chlorides, carbonates, alkalies, tannin phosphates, resorcinol, salicylic acid, phenol, chloral hydrate, sulfites, vegetable infusions, tinctures.
For further information see Vol. 1, No. 4 of *DPIM Report.*

LEAD ACETATE, BASIC

CAS RN: 1335326 NIOSH #: OF 8750000
mf: $C_4H_{10}O_8Pb_3$; mw: 807.71

SYNS:
CYANSAN SAN-CYAN

TOXICITY DATA: 3 CODEN:
orl-hmn TDLo:5400 mg/kg/24W:EYE AROPAW 94,927,76
ims-rat LD50:310 mg/kg BJPCAL 1,186,46
orl-mus LDLo:4 mg/kg APFRAD 19,740,61

Reported in EPA TSCA Inventory, 1980.

THR: Toxic to eye in hmn via orl. HIGH ims, orl. See also cyanates.

Disaster Hazard: When heated to decomp it emits very tox fumes of CN^- and Na_2O.

CYANIDE

CAS RN: 57125 NIOSH #: GS 7175000
mf: CN^-; mw: 26.02

SYN: CYANURE (FRENCH)

TOXICITY DATA: 3 CODEN:
ipr-mus LD50:3 mg/kg NATUAS 228,1315,70

TLV: Air: 5 mg/m3 DTLVS* 4,109,80. *Toxicology Review:* CLCHAU 19,361,73. "NIOSH Manual of Analytical Methods" VOL 1 116, VOL 3 S250. Reported in EPA TSCA Inventory, 1980.

THR: Cyanide directly stimulates the chemoreceptors of the carotid and aortic bodies with a resultant hyperpnea. Cardiac irregularities are often noted, but the heart invariably outlasts the respirations. Death is due to respiratory arrest of central origin. It can occur within seconds or minutes of the inhalation of high concentrations of hydrogen cyanide gas. Because of slower absorption, death may be more delayed after the ingestion of cyanide salts, but the critical events still occur within the first hour.

Two other sources of cyanide have been responsible for human poisoning. One of these is amygdalin, a cyanogenic glycoside found in apricot, peach, and similar fruit pits and in sweet almonds. Amygdalin is a chemical combination of glucose, benzaldehyde, and cyanide from which the latter can be released by the action of β-glucosidase or emulsin. Although these enzymes are not found in mammalian tissues, the human intestinal microflora appears to possess these or similar enzymes capable of effecting cyanide release resulting in human poisoning. For this reason amygdalin may be as much as 40 times more toxic by the oral route as compared with intravenous injection. Amygdalin is the major ingredient of Laetrile, and this alleged anticancer drug has also been responsible for human cyanide poisoning. An ethical drug that may also cause cyanide poisoning in overdose is the potent vascular smooth muscle relaxant sodium nitroprusside. Although nitroprusside is related chemically to ferricyanide, unlike the latter it penetrates into erythrocytes and reacts with hemoglobin to release its cyanide (Smith and Kruszyna, 1974). Fortunately, the therapeutic margin for nitroprusside appears to be quite large.

Cyanide is commonly found in certain rat and pest poisons, silver and metal polishes, photographic solutions, and fumigating products. Compounds such as potassium cyanide can also be readily purchased from chemical stores. Cyanide is readily absorbed from all routes, including the skin, mu mem, and by inhal, although alkali salts of cyanide are toxic only when ingested. Death may occur with ingestion of even small amounts of sodium or potassium cyanide and can occur within minutes or hours depending on route of exposure. Inhalation of toxic fumes represents a potentially rapidly fatal type of exposure. Sodium nitroprusside (Smith and Kruszyna, 1974) and apricot seeds (Sayre and Kaymakcalan, 1964) have also caused cyanide poisoning. A blood cyanide level of greater than 0.2 μg/ml is considered toxic. Lethal cases have usually had levels above 1 μg/ml. Clinically, cyanide poisoning is reported to produce a bitter, almond odor on the breath of the patient; however, only a small proportion of the population is genetically able to discern this characteristic odor. Typically, cyanide has a bitter, burning taste, and following poisoning, symptoms of salivation, nausea without vomiting, anxiety, confusion, vertigo, giddiness, lower jaw stiffness, convulsions, opisthotonos, paralysis, coma, cardiac arrhythmias, and transient respiratory stimulation followed by respiratory failure may occur. Bradycardia is a common finding, but in most cases heartbeat usually outlasts respiration (Wexler et al., 1947). A prolonged expiratory phase is considered to be characteristic of cyanide poisoning.* The volatile cyanides resemble hydrocyanic acid physiologically, inhibiting tissue oxidation and causing death through asphyxia. Cyanogen is probably as toxic as hydrocyanic acid; the nitriles are generally considered somewhat less toxic, probably because of their lower volatility. The non-volatile cyanide salts appear to be relatively non-toxic systemically, so long as they are not ingested and care is taken to prevent the formation of hydrocyanic acid. Workers, such as electroplaters and picklers, who are daily exposed to cyanide solutions may develop a "cyanide" rash, characterized by itching, and by macular, papular, and vesicular eruptions. Frequently there is secondary infection. Exposure to small amounts of cyanide compounds over long periods of time is reported to cause loss of appetite, headache, weakness, nausea, dizziness, and symptoms of irr of the upper respiratory tract and eyes. See also specific compounds.

Fire Hazard: Mod, by chemical reaction with heat, moisture, acid. Many cyanides evolve hydrocyanic acid rather easily. This is a flam gas and is highly toxic. Carbon dioxide from the air is sufficiently acidic to liberate hydrocyanic acid from cyanide solutions. See also hydrocyanic acid.

Explosion Hazard: See hydrocyanic acid. Explodes if melted with nitrite or chlorate @ about 450°. Violent reaction with F_2, Mg, nitrates, HNO_3, nitrites.

Disaster Hazard: Dangerous; on contact with acid, acid

* Casarett and Doull's,"Toxicology, the basic Science of Poisons" 2nd ed. Doull, Klaassen and Amdur (eds). Macmillan Pub. Co. Inc. New York, N.Y.

REFERENCES

REFERENCES

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5. AWIC/ADEM compliance monitoring analyses.

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9. Alabama County Data Book, 1983.

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12. Climatological Survey for Forty Potential Hazardous Waste Sites in Alabama, prepared by Office of State Climatologist, Jan. 1985.

13. Dangerous Properties of Industrial Materials, Sixth Edition, North Irving Sax, 1984.

14. The Merck Index, Ninth Edition, Merck & Company, Inc., 1976.

15. ADEM Water Division files for Union Carbide.

ENVIRONMENTAL PROTECTION SYSTEMS, INC.

Alabama RCRA 3012 Site Ranking Scheme
EPS Form 3012-Y

Site Name ALABAMA RECLAMATION
Site Number ALD006652693

Site Inspection Ranking Scheme

(Select one answer for each of the following seven questions)

1. Are Hazardous Substances Present?		
A. Confirmed on site!	10 points	
B. Suspected at site!	5 points	X
C. It is unknown!	2 points	
D. No hazardous substances	0 points	
E. RCRA facility only!	0 points	
2. Is There a Pollution Dispersal Pathway?		
A. Direct to surface and/or groundwater.	5 points	
B. Indirect to surface and/or groundwater.	4 points	
C. Suspected to surface and/or groundwater.	3 points	X
D. Not known for sure.	2 points	
E. No pathway.	0 points	
3. Characteristics of Human Population?		
A. High density.	5 points	
B. Medium density.	4 points	
C. Low density.	3 points	X
D. No population.	2 points	
4. Characteristics of Natural Environment?		
A. Critical habitat including endangered species, etc.	5 points	
B. Sensitive habitat.	3 points	
C. Common less sensitive habitat.	2 points	X
5. How is Human Population Affected By Site?		
A. Public utility of drinking water from site.	5 points	
B. Direct public access to site.	4 points	
C. Public access to affected surface water.	3 points	X
D. Only potential for human population contact.	2 points	
E. Low or no potential for contact.	1 point	
6. Facility Management Practices at Site?		
A. Site actively supervised and managed currently with monitoring reports and other permit and report requirements.	1 point	X
B. Site inadequately managed records not up-to-date.	3 points	

C. Site not currently managed or regulated.	4 points	
D. Abandon site.	5 points	

7. Potential Responsible Parties for Site Operations?

A. Controlling party identified and accepts responsibility for site.	1 point	X
B. Suspected controlling party identified but does not accept responsibility for site.	4 points	
C. No responsible party available.	5 points	

Ranking Score =

$$\frac{5}{\#1} \times \left[\frac{3}{\#2} + \frac{2}{\#4} + \left(\frac{3}{\#3} \times \frac{3}{\#5} \right) + \frac{1}{\#6} + \frac{1}{\#7} \right]$$

TABLE 1. Ranking Assessment

NUMERICAL RANGE	PRIORITY ASSESSMENT
0-50	NONE
50-150	LOW
150-300	MEDIUM
300-450	HIGH

Ranking Score: 80

Priority Assessment: LOW

. Site not currently managed or regulated. — 4 points
. Abandon site. — 5 points

Potential Responsible Parties for Site Operations?

A. Controlling party identified and accepts responsibility for site. — 1 point X

B. Suspected controlling party identified but does not accept responsibility for site. — 4 points

C. No responsible party available. — 5 points

anking Score =

$$\frac{5}{\#1} \times \left[\frac{3}{\#2} + \frac{2}{\#4} + \left(\frac{3}{\#3} \times \frac{3}{\#5}\right) + \frac{1}{\#6} + \frac{1}{\#7}\right]$$

TABLE 1. Ranking Assessment

NUMERICAL RANGE	PRIORITY ASSESSMENT
0-50	NONE
50-150	LOW
150-300	MEDIUM
300-450	HIGH

Ranking Score: 80

Priority Assessment: LOW

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 1 - SITE LOCATION AND INSPECTION INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
AL	D000652693

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER
REYNOLDS METALS Co.-ALABAMA RECLAMATION	RIVER ROAD

03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG DIST.
MUSCLE SHOALS	AL	35660	COLBERT	033	05

09 COORDINATES LATITUDE	LONGITUDE	10 TYPE OF OWNERSHIP (Check one)
34 47 32.	087 36 00.	☒ A. PRIVATE ☐ B. FEDERAL ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL ☐ F. OTHER ☐ G. UNKNOWN

III. INSPECTION INFORMATION

01 DATE OF INSPECTION	02 SITE STATUS	03 YEARS OF OPERATION
1 15 85 (MONTH DAY YEAR)	☒ ACTIVE ☐ INACTIVE	1940 (BEGINNING YEAR) ____ (ENDING YEAR) ____ UNKNOWN

04 AGENCY PERFORMING INSPECTION (Check all that apply)

☐ A. EPA ☐ B. EPA CONTRACTOR _____ (Name of firm) ☐ C. MUNICIPAL ☐ D. MUNICIPAL CONTRACTOR _____ (Name of firm)
☐ E. STATE ☒ F. STATE CONTRACTOR EPS, INC. (Name of firm) ☐ G. OTHER _____ (Specify)

05 CHIEF INSPECTOR	06 TITLE	07 ORGANIZATION	08 TELEPHONE NO
DONALEA DINSMORE	ENVIRONMENTAL CHEMIST	EPS	(601) 922-8242

09 OTHER INSPECTORS	10 TITLE	11 ORGANIZATION	12 TELEPHONE NO
THOMAS McALPIN	FIELD SUPPORT STAFF	EPS	(901) 944-0301
			( )
			( )
			( )
			( )

13 SITE REPRESENTATIVES INTERVIEWED	14 TITLE	15 ADDRESS	16 TELEPHONE NO
EARL McGUIRE	PLANT ENGINEER	ALABAMA RECLAMATION	(205) 336-8316
			( )
			( )
			( )
			( )
			( )

17 ACCESS GAINED BY (Check one)	18 TIME OF INSPECTION	19 WEATHER CONDITIONS
☒ PERMISSION ☐ WARRANT	8 45 A.M.	SLIGHTLY WINDY, COLD 22°F - 38°F WINDCHILL -2°F

IV. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NO
STEVE MAURER	ADEM	(205) 271-7728

04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NO.	08 DATE
DONALEA DINSMORE		EPS	(601) 922-8242	3 27 85 (MONTH DAY YEAR)

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
AL	D000652693

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

- X A SOLID
- B POWDER, FINES
- C SLUDGE
- D OTHER _____ (Specify)
- E SLURRY
- F LIQUID
- G GAS

02 WASTE QUANTITY AT SITE (Measures of waste quantities must be independent)

TONS _____
CUBIC YARDS UNKNOWN
NO OF DRUMS _____

03 WASTE CHARACTERISTICS (Check all that apply)

- A TOXIC
- B CORROSIVE
- C RADIOACTIVE
- D PERSISTENT
- E SOLUBLE
- F INFECTIOUS
- G FLAMMABLE
- H IGNITABLE
- I HIGHLY VOLATILE
- J EXPLOSIVE
- K REACTIVE
- L INCOMPATIBLE
- M NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE	18	ACRES	HIGH TOTAL LEAD, NOT LEACHABLE
OLW	OILY WASTE			
SOL	SOLVENTS			
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS			

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
SLU	PROCESS SLUDGE (WITH LEAD)	999	SI	500-2200	MG/KG

V. FEEDSTOCKS (See Appendix for CAS Numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

PRELIMINARY ASSESSMENT
RCRA 3012 SITE INVESTIGATION

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
AL	D0006 52693

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☐ A. GROUNDWATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ B. SURFACE WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ C. CONTAMINATION OF AIR
03 POPULATION POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS
03 POPULATION POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ E. DIRECT CONTACT
03 POPULATION POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☒ F. CONTAMINATION OF SOIL
03 AREA POTENTIALLY AFFECTED: 18 (Acres)
02 ☒ OBSERVED (DATE: 1/15/85) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

SLUDGE CONTAINS 500-2000 ppm TOTAL LEAD AND WAS PLACED IN SURFACE IMPOUNDMENTS - AREA NOW DRY WITH DIRECT SOIL CONTACT

01 ☐ G. DRINKING WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ H. WORKER EXPOSURE/INJURY
03 WORKERS POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ I. POPULATION EXPOSURE/INJURY
03 POPULATION POTENTIALLY AFFECTED: _____
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
AL	D006152693

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☐ J. DAMAGE TO FLORA — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ K. DAMAGE TO FAUNA — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION (Include name(s) of species)

01 ☐ L. CONTAMINATION OF FOOD CHAIN — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ M. UNSTABLE CONTAINMENT OF WASTES (Spills, Runoff, Standing liquids, Leaking drums) — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ 04 NARRATIVE DESCRIPTION

01 ☐ N. DAMAGE TO OFFSITE PROPERTY — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: _____

IV. COMMENTS

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
AL	D000652693

II. DRINKING WATER SUPPLY

01 TYPE OF DRINKING SUPPLY (Check as applicable)	SURFACE	WELL	02 STATUS ENDANGERED	AFFECTED	MONITORED	03 DISTANCE TO SITE
COMMUNITY	A. X	B. ☐	A. ☐	B. ☐	C. X	A. 3.0 (mi)
NON-COMMUNITY	C. ☐	D. ☐	D. ☐	E. ☐	F. ☐	B. ____ (mi)

III. GROUNDWATER

01 GROUNDWATER USE IN VICINITY (Check one)

☐ A. ONLY SOURCE FOR DRINKING ☐ B. DRINKING (Other sources available) COMMERCIAL, INDUSTRIAL, IRRIGATION (No other water sources available) X C. COMMERCIAL, INDUSTRIAL, IRRIGATION (Limited other sources available) ☐ D. NOT USED, UNUSEABLE

02 POPULATION SERVED BY GROUND WATER UNKNOWN

03 DISTANCE TO NEAREST DRINKING WATER WELL UNKNOWN (mi)

04 DEPTH TO GROUNDWATER	05 DIRECTION OF GROUNDWATER FLOW	06 DEPTH TO AQUIFER OF CONCERN	07 POTENTIAL YIELD OF AQUIFER	08 SOLE SOURCE AQUIFER
150-200 (ft)	GEN. NORTH TO RIVER	150-200 (ft)	700,000 (gpd)	☐ YES X NO

09 DESCRIPTION OF WELLS (Including useage, depth, and location relative to population and buildings)
NO WELL LOGS AVAILABLE - SOME SPRINGS REPORTED SOUTHWEST OF FACILITY

10 RECHARGE AREA ☐ YES ☐ NO COMMENTS GENERAL AQUIFER MAPS INDICATE SITE IN POTENTIAL RECHARGE OF TUSCUMBIA LIMESTONE AQUIFERS

11 DISCHARGE AREA ☐ YES ☐ NO COMMENTS NUMEROUS SPRINGS IN COUNTY AS WELL AS TENNESSEE RIVER

IV. SURFACE WATER

01 SURFACE WATER USE (Check one)

X A. RESERVOIR, RECREATION DRINKING WATER SOURCE ☐ B. IRRIGATION, ECONOMICALLY IMPORTANT RESOURCES ☐ C. COMMERCIAL, INDUSTRIAL ☐ D. NOT CURRENTLY USED

02 AFFECTED/POTENTIALLY AFFECTED BODIES OF WATER

NAME:	AFFECTED	DISTANCE TO SITE
TENNESSEE RIVER	☐	0.05 (mi)
	☐	(mi)
	☐	(mi)

V. DEMOGRAPHIC AND PROPERTY INFORMATION

01 TOTAL POPULATION WITHIN

ONE (1) MILE OF SITE	TWO (2) MILES OF SITE	THREE (3) MILES OF SITE
A. 50 (EST) NO OF PERSONS	B. 300 (EST) NO OF PERSONS	C. ____ NO OF PERSONS

02 DISTANCE TO NEAREST POPULATION 0.2 (mi)

03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE ____

04 DISTANCE TO NEAREST OFF-SITE BUILDING 0.2 (mi)

05 POPULATION WITHIN VICINITY OF SITE (Provide narrative description of nature of population within vicinity of site, e.g., rural, village, densely populated urban area)
RESIDENTIAL AREAS ARE LOCATED ALONG THE TENNESSEE RIVER BACKWATERS BOTH TO THE EAST AND WEST OF THE FACILITY. ANOTHER SUB-DIVISION IS LOCATED TO SOUTHWEST OF SITE. TO SOUTH AND EAST AREAS ARE EITHER ~~UNDEVELOPED~~ UNDEVELOPED OR INDUSTRIAL. MAJOR POPULATION AREAS LOCATED TO WEST OF SITE IN MUSCLE SHOALS - TRI CITIES AREA.

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION
PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
AL	D 000652693

II. PERMIT INFORMATION

01 TYPE OF PERMIT ISSUED (Check all that apply)	02 PERMIT NUMBER	03 DATE ISSUED	04 EXPIRATION DATE	05 COMMENTS
☐ A. NPDES				INACTIVE
☐ B. UIC				
☐ C. AIR				INACTIVE
☐ D. RCRA				
☒ E. RCRA INTERIM STATUS	ALD000652693	11/80		WITHDRAWN
☐ F. SPCC PLAN				
☐ G. STATE (Specify)				
☐ H. LOCAL (Specify)				
☐ I. OTHER (Specify)				
☐ J. NONE				

III. SITE DESCRIPTION

01 STORAGE/DISPOSAL (Check all that apply)	02 AMOUNT	03 UNIT OF MEASURE
☒ A. SURFACE IMPOUNDMENT	18	ACRES
☐ B. PILES		
☐ C. DRUMS, ABOVE GROUND		
☐ D. TANK, ABOVE GROUND		
☐ E. TANK, BELOW GROUND		
☐ F. LANDFILL		
☐ G. LANDFARM		
☐ H. OPEN DUMP		
☐ I. OTHER (Specify)		

04 TREATMENT (Check all that apply)
- ☐ A. INCENERATION
- ☐ B. UNDERGROUND INJECTION
- ☐ C. CHEMICAL/PHYSICAL
- ☐ D. BIOLOGICAL
- ☐ E. WASTE OIL PROCESSING
- ☐ F. SOLVENT RECOVERY
- ☐ G. OTHER RECYCLING/RECOVERY
- ☐ H. OTHER (Specify)

05 OTHER
- ☒ A. BUILDINGS ON SITE

06 AREA OF SITE: > 50 (Acres)

07 COMMENTS
SURFACE IMPOUNDMENTS NOW DRY - SOME COVERED WITH KUDZU AND OTHER VEGETATION

IV. CONTAINMENT

01 CONTAINMENT OF WASTES (Check one)
☐ A. ADEQUATE, SECURE ☐ B. MODERATE ☐ C. INADEQUATE, POOR ☐ D. INSECURE, UNSOUND, DANGEROUS

02 DESCRIPTION OF DRUMS, DIKING, LINERS, BARRIERS, ETC.
FORMER SURFACE IMPOUNDMENT HAD DIKING AND WASTE MATERIAL WELL CONTAINED WITHIN INDIVIDUAL AREAS. DIKES PRESENTLY OVERGROWN WITH VEGETATION

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE ☒ YES ☐ NO
02 COMMENTS
SOME RESTRICTED ACCESS DUE TO VEGETATION

VI. SOURCES OF INFORMATION (Cite specific references, e.g. state files, sample analysis, reports)
RCRA PART A APPLICATION
SITE INVESTIGATION

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
AL	D000652693

II. DRINKING WATER SUPPLY

01 TYPE OF DRINKING SUPPLY (Check as applicable)	SURFACE	WELL	02 STATUS	ENDANGERED	AFFECTED	MONITORED	03 DISTANCE TO SITE
COMMUNITY	A. X	B. ☐		A. ☐	B. ☐	C. X	A. 3.0 (mi)
NON-COMMUNITY	C. ☐	D. ☐		D. ☐	E. ☐	F. ☐	B. ____ (mi)

III. GROUNDWATER

01 GROUNDWATER USE IN VICINITY (Check one)

☐ A. ONLY SOURCE FOR DRINKING ☐ B. DRINKING (Other sources available) COMMERCIAL, INDUSTRIAL, IRRIGATION (No other water sources available) X C. COMMERCIAL, INDUSTRIAL, IRRIGATION (Limited other sources available) ☐ D. NOT USED, UNUSEABLE

02 POPULATION SERVED BY GROUND WATER UNKNOWN

03 DISTANCE TO NEAREST DRINKING WATER WELL UNKNOWN (mi)

04 DEPTH TO GROUNDWATER	05 DIRECTION OF GROUNDWATER FLOW	06 DEPTH TO AQUIFER OF CONCERN	07 POTENTIAL YIELD OF AQUIFER	08 SOLE SOURCE AQUIFER
150-200 (ft)	GEN. NORTH TO RIVER	150-200 (ft)	700,000 (gpd)	☐ YES X NO

09 DESCRIPTION OF WELLS (Including usage, depth, and location relative to population and buildings)

NO WELL LOGS AVAILABLE - SOME SPRINGS REPORTED SOUTHWEST OF FACILITY

10 RECHARGE AREA ☐ YES ☐ NO COMMENTS GENERAL AQUIFER MAPS INDICATE SITE IN POTENTIAL RECHARGE OF TUSCUMBIA LIMESTONE AQUIFERS

11 DISCHARGE AREA ☐ YES ☐ NO COMMENTS NUMEROUS SPRINGS IN COUNTY AS WELL AS TENNESSEE RIVER

IV. SURFACE WATER

01 SURFACE WATER USE (Check one)

X A. RESERVOIR, RECREATION DRINKING WATER SOURCE ☐ B. IRRIGATION, ECONOMICALLY IMPORTANT RESOURCES ☐ C. COMMERCIAL, INDUSTRIAL ☐ D. NOT CURRENTLY USED

02 AFFECTED/POTENTIALLY AFFECTED BODIES OF WATER

NAME	AFFECTED	DISTANCE TO SITE
TENNESSEE RIVER	☐	0.05 (mi)
	☐	(mi)
	☐	(mi)

V. DEMOGRAPHIC AND PROPERTY INFORMATION

01 TOTAL POPULATION WITHIN

ONE (1) MILE OF SITE	TWO (2) MILES OF SITE	THREE (3) MILES OF SITE
A. 50 (EST) NO. OF PERSONS	B. 300 (EST) NO. OF PERSONS	C. ____ NO. OF PERSONS

02 DISTANCE TO NEAREST POPULATION 0.2 (mi)

03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE ____

04 DISTANCE TO NEAREST OFF-SITE BUILDING 0.2 (mi)

05 POPULATION WITHIN VICINITY OF SITE (Provide narrative description of nature of population within vicinity of site, e.g., rural, village, densely populated urban area)

RESIDENTIAL AREAS ARE LOCATED ALONG THE TENNESSEE RIVER BACKWATERS BOTH TO THE EAST AND WEST OF THE FACILITY. ANOTHER SUB-DIVISION IS LOCATED TO SOUTHWEST OF SITE. TO SOUTH AND EAST AREAS ARE EITHER ~~UNDEVELOPED~~ UNDEVELOPED OR INDUSTRIAL. MAJOR POPULATION AREAS LOCATED TO WEST OF SITE IN MUSCLE SHOALS - TRI CITIES AREA.

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
AL	D 000652693

VI. ENVIRONMENTAL INFORMATION

01 PERMEABILITY OF UNSATURATED ZONE (Check one)

☐ A. $10^{-6} - 10^{-8}$ cm/sec ☒ B. $10^{-4} - 10^{-6}$ cm/sec ☐ C. $10^{-4} - 10^{-3}$ cm/sec ☐ D. GREATER THAN 10^{-3} cm/sec

02 PERMEABILITY OF BEDROCK (Check one)

☐ A. IMPERMEABLE (Less than 10^{-6} cm/sec) ☒ B. RELATIVELY IMPERMEABLE ($10^{-4} - 10^{-6}$ cm/sec) ☐ C. RELATIVELY PERMEABLE ($10^{-2} - 10^{-4}$ cm/sec) ☐ D. VERY PERMEABLE (Greater than 10^{-2} cm/sec)

03 DEPTH TO BEDROCK	04 DEPTH OF CONTAMINATED SOIL ZONE	05 SOIL pH
UNKNOWN (ft)	EST 8 - 12 (ft)	4.5 - 5.5

06 NET PRECIPITATION	07 ONE YEAR 24 HOUR RAINFALL	08 SLOPE: SITE SLOPE	DIRECTION OF SITE SLOPE	TERRAIN AVERAGE SLOPE
14.2 (in)	2.5 (in)	10-20 %	VARIABLE	10-20 %

09 FLOOD POTENTIAL: SITE IS IN >100 YEAR FLOODPLAIN

10: ☐ SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY

11 DISTANCE TO WETLANDS (5 acre minimum): ESTUARINE A. _____ (mi); OTHER B. 3 (mi)

12 DISTANCE TO CRITICAL HABITAT (of endangered species): >10 (mi)

ENDANGERED SPECIES: _____

13 LAND USE IN VICINITY

DISTANCE TO:

COMMERCIAL/INDUSTRIAL	RESIDENTIAL AREAS; NATIONAL/STATE PARKS, FORESTS, OR WILDLIFE RESERVES	AGRICULTURAL LANDS: PRIME AG LAND	AGRICULTURAL LANDS: AG LAND
A. 1 (mi)	B. 0.2 (mi)	C. 0.5 (mi)	D. 0.5 (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

LAND IN TENNESSEE RIVER VALLEY CHARACTERIZED BY ROLLING HILLS AND GENTLE SLOPES. SOME BLUFFS LOCATED ALONG RIVER. INDUSTRIAL AREAS TO SOUTH HAVE RELATIVELY FLAT TOPOGRAPHY WITH SLOPES < 2%. PLANT SITE ITSELF IS HILLY WITH MANUFACTURING OPERATIONS IN RELATIVELY LEVEL SECTION.

VII. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

CORP. OF ENGINEERS DATA INVENTORY FOR STATE OF ALABAMA
GROUNDWATER RESOURCES OF COLBERT COUNTY

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 6 - SAMPLE AND FIELD INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
AL	D000652693

II. SAMPLES TAKEN

SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAILABLE
GROUNDWATER			
SURFACE WATER			
WASTE	7	ENVIRONMENTAL PROTECTION SYSTEMS, INC.	3/11/85
AIR			
RUNOFF			
SPILL			
SOIL	1	ENVIRONMENTAL PROTECTION SYSTEMS, INC	3/11/85
VEGETATION			
OTHER			

III. FIELD MEASUREMENTS TAKEN

01 TYPE	02 COMMENTS

IV. PHOTOGRAPHS AND MAPS

01 TYPE ☐ GROUND ☐ AERIAL

02 IN CUSTODY OF NO PICTURES ALLOWED AT SITE
(Name of organization or individual)

03 MAPS ☒ YES ☐ NO

04 LOCATION OF MAPS ENCLOSED, ADEM FILES

V. OTHER FIELD DATA COLLECTED (Provide narrative description)

VI. SOURCES OF INFORMATION (Cite specific references, e.g. state files, sample analysis, reports)

RCRA 3012 SITE INVESTIGATION
LABORATORY PROJECT MANAGER

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 7 - OWNER INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
AL	D000652693

II. CURRENT OWNER(S)

01 NAME	02 D+B NUMBER
REYNOLDS METALS COMPANY	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
6601 WEST BROAD ST.	

05 CITY	06 STATE	07 ZIP CODE
RICHMOND	VA.	23261

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

PARENT COMPANY (If applicable)

08 NAME	09 D+B NUMBER

10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE

12 CITY	13 STATE	14 ZIP CODE

08 NAME	09 D+B NUMBER

10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE

12 CITY	13 STATE	14 ZIP CODE

08 NAME	09 D+B NUMBER

10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE

12 CITY	13 STATE	14 ZIP CODE

08 NAME	09 D+B NUMBER

10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE

12 CITY	13 STATE	14 ZIP CODE

III. PREVIOUS OWNER(S) (List most recent first)

01 NAME	02 D+B NUMBER
UNION CARBIDE	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

IV. REALTY OWNER(S) (If applicable, list most recent first)

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

PRELIMINARY ASSESSMENT

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 8 - OPERATOR INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
AL	D 000652693

II. CURRENT OPERATOR (Provide if different from owner)

01 NAME	02 D+B NUMBER
ALABAMA RECLAMATION	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
RIVER ROAD	

05 CITY	06 STATE	07 ZIP CODE
MUSCLE SHOALS	AL	35660

08 YEARS OF OPERATION	09 NAME OF OWNER
1 (1984) BEGN	REYNOLDS METALS

OPERATOR'S PARENT COMPANY (If applicable)

10 NAME	11 D+B NUMBER
REYNOLDS METALS	

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE
6601 WEST BROAD ST	

14 CITY	15 STATE	16 ZIP CODE
RICHMOND	VA	23261

III. PREVIOUS OPERATOR(S) (List most recent first, provide only if different from owner)

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD

PREVIOUS OPERATORS' PARENT COMPANIES (If applicable)

10 NAME	11 D+B NUMBER

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE

14 CITY	15 STATE	16 ZIP CODE

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD

10 NAME	11 D+B NUMBER

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE

14 CITY	15 STATE	16 ZIP CODE

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD

10 NAME	11 D+B NUMBER

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE

14 CITY	15 STATE	16 ZIP CODE

IV. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

PRELIMINARY ASSESSMENT

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 9 - GENERATOR/TRANSPORTER INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
AL	D000652693

II. ON-SITE GENERATOR

01 NAME		02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE	

III. OFF-SITE GENERATOR(S)

01 NAME		02 D+B NUMBER	01 NAME		02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE
01 NAME		02 D+B NUMBER	01 NAME		02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE

IV. TRANSPORTER(S)

01 NAME		02 D+B NUMBER	01 NAME		02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE
01 NAME		02 D+B NUMBER	01 NAME		02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

NO HAZARDOUS WASTE CURRENTLY GENERATED

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
AL	D000652693

II. PAST RESPONSE ACTIVITIES

01 ☐ A. WATER SUPPLY CLOSED 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
01 ☐ B. TEMPORARY WATER SUPPLY PROVIDED 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
01 ☐ C. PERMANENT WATER SUPPLY PROVIDED 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
01 ☐ D. SPILLED MATERIAL REMOVED 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
01 ☐ E. CONTAMINATED SOIL REMOVED 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
01 ☐ F. WASTE REPACKAGED 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
01 ☐ G. WASTE DISPOSED ELSEWHERE 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
01 ☐ H. ON SITE BURIAL 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
01 ☐ I. IN SITU CHEMICAL TREATMENT 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
01 ☐ J. IN SITU BIOLOGICAL TREATMENT 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
01 ☐ K. IN SITU PHYSICAL TREATMENT 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
01 ☐ L. ENCAPSULATION 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
01 ☐ M. EMERGENCY WASTE TREATMENT 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
01 ☐ N. CUTOFF WALLS 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
01 ☐ O. EMERGENCY DIKING/SURFACE WATER DIVERSION 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
01 ☐ P. CUTOFF TRENCHES/SUMP 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
01 ☐ Q. SUBSURFACE CUTOFF WALL 04 DESCRIPTION	02 DATE _____	03 AGENCY _____

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 11 - ENFORCEMENT INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
AL	D000652693

II. ENFORCEMENT INFORMATION

01 PAST REGULATORY ENFORCEMENT ACTION ☐ YES ☒ NO

02 DESCRIPTION OF FEDERAL, STATE, LOCAL REGULATORY/ENFORCEMENT ACTION

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
AL	D 000652693

II PAST RESPONSE ACTIVITIES *(Continued)*

01 ☐ R. BARRIER WALLS CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ S. CAPPING COVERING — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ T. BULK TANKAGE REPAIRED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ U. GROUT CURTAIN CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ V. BOTTOM SEALED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ W. GAS CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ X. FIRE CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ Y. LEACHATE TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ Z. AREA EVACUATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ 1. ACCESS TO SITE RESTRICTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ 2. POPULATION RELOCATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ 3. OTHER REMEDIAL ACTIVITIES — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

III. SOURCES OF INFORMATION *(Cite specific references, e.g., state files, sample analysis, reports)*

ADEM LAND AND WATER FILES

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 11 - ENFORCEMENT INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
AL	D000652693

II. ENFORCEMENT INFORMATION

01 PAST REGULATORY/ENFORCEMENT ACTION ( ) YES (X) NO

02 DESCRIPTION OF FEDERAL, STATE, LOCAL REGULATORY/ENFORCEMENT ACTION

III. SOURCES OF INFORMATION *(Cite specific references, e.g., state files, sample analysis, reports)*

ENVIRONMENTAL PROTECTION SYSTEMS, INC.
RCRA 3012
SITE SAFETY PLAN

A. GENERAL INFORMATION

SITE: Reynolds Metals Co. - River Road Plant EPA NO.: ALD000652693

LOCATION: River Road, Muscle Shoals, AL

PLAN PREPARED BY: L. W. Warren DATE: 11/19/84
APPROVED BY: E. Corbin McGriff, Jr. DATE: 11/26/84
E. Corbin McGriff, Jr., Ph.D., P.E.

OBJECTIVE(S): To collect environmental samples and waste samples on and around site to characterize any hazardous materials present.

PROPOSED DATE OF INVESTIGATION: December 1984

BACKGROUND REVIEW: Complete: X Preliminary: ___

DOCUMENTATION/SUMMARY: OVERALL HAZARD: Serious: ___ Moderate: ___
Low: X Unknown: ___

B. SITE/WASTE CHARACTERISTICS

WASTE TYPE(S): Liquid: ___ Solid: X Sludge: ___ Gas: ___

CHARACTERISTICS: Corrosive: ___ Ignitable: ___ Radioactive: ___ Volatile:
Toxic: X Reactive: ___ Unknown: ___
Other (Name): ___

FACILITY DESCRIPTION: Facility was involved in manufacture of ferromanganese alloys.

Principal Disposal Method (type and location): Three disposal areas reported at the site.

Unusual Features (dike integrity, power lines, terrain, etc.):

Status: (active, inactive, unknown) Inactive

History: (Worker or non-worker injury; complaints from public: previous agency action):

C. HAZARD EVALUATION

Hazard evaluation is low. Ferromanganese emission control dust sludge disposed in three areas on site. Cyanide used at one time at faciltiy. Records indicate cyanide destruction techniques used since operations began.

D. SITE SAFETY WORK PLAN

PERIMETER ESTABLISHMENT: Map/Sketch Attached X Site Secured? ___

Perimeter Identified? ___ Zone(s) of Contamination Identified? ___

PERSONAL PROTECTION

Level of Protection A ___ B ___ C ___ D X

Modifications:

Surveillance Equipment and Materials: Boring device, hard hats, gloves, boots.

DECONTAMINATION PROCEDURES: Dispose of contaminated boots and gloves.

Special Equipment, Facilities, or Procedures:

SITE ENTRY PROCEDURES: Permission of owner/operator should be obtained before entry.

Team Member	Responsibility

WORK LIMITATIONS (Time of day, etc.): Daylight hours

INVESTIGATION-DERIVED MATERIAL DISPOSAL: Samples will be sent to the laboratory for analysis. Samples will then be disposed of by the laboratory.

E. EMERGENCY INFORMATION

LOCAL RESOURCES

Ambulance: 386-4000 or 766-8600
Hospital or Emergency Room: 383-7441 Humana Hospital Shoals
Poison Control Center: 1-800-462-0800
Police: 383-1771
Fire Department: 383-1512
Airport:
Explosives Unit:
EPA Contact: Ms. Camilla Warren, Region IV 404/881-2234

SITE RESOURCES

Water Supply:
Telephone:
Radio:
Other:

EMERGENCY CONTACTS

Mr. Dan Cooper, (ADEM) 205/271-7732
EPA Emergency Spill Center 404/881-4062

F. EMERGENCY ROUTES

(Give road or other directions; attach map)

Hospital:

Other:

ENVIRONMENTAL PROTECTION SYSTEMS, INC.

RCRA 3012
SITE SCREENING STUDY FORM

EPS Project Manager: W. Warren Date: 11/19/84

SITE INFORMATION

EPA I.D. No: ALD000652693

Site Name: Reynolds Metals - River Road Plant Street: River Road

City: Muscle Shoals County: Colbert State: Alabama

Site Owner: Reynolds Metals Co.

Site Manager: Mr. Charles Bent Phone No: 804/281-2918

Address: 6601 West Broad Street, Richmond VA 23261

Purpose of Study: To collect environmental and waste samples on and around the site to determine and characterize any hazardous materials present.

Site Sketch Attached: X Yes ___ No

SITE BACKGROUND

Site Description (including Waste Types and Dispositions):

Reynolds Metals Company purchased the River Road facility from Union Carbide in 1980. The facility was involved in manufacturing ferromanganese alloys. Emission control dust was placed in three area landfills. Facility also used cyanide at one time. Records did indicate that cyanide destruction was in use since that operation began.

METHODOLOGY

All sample collection, sample preservation and chain-of-custody procedures used during this investigation will be in accordance with the standard operating procedures as specified in the Quality Control/Quality Assurance Plan for the Analytical and Environmental Division of Environmental Protection Systems, Inc., revised August 31, 1984. All laboratory analyses and quality assurance procedures used during this investigation will be in accordance with standard procedures and protocols as specified in the Quality Control/Quality Assurance Plan for the Analytical and Environmental Division of Environmental Protection Systems, Inc., revised August 31, 1984, or as specified by the existing United States Environmental Protection Agency standard procedures and protocols for the contract analytical laboratory program.

SAMPLING REQUIREMENTS

No. Water Samples: ___ No. Soil/Sediment Samples: 7
No. Sludge Samples: ___ Other: ___

Split Samples Requested?: ___ Yes ___ No ___ Unknown

If yes, reason: ___

Sample Information: Duplicate Samples: One Per Site

Station	Type	Organics Acid	Organics B/N	Organics Pest	Metals Total	Metals EPT	VOA	Other
RE-S01-LA	Soil/Comp.				X			CN
RE-S02-LA	Soil/Comp.				X			CN
RE-S03-LA	Soil/Comp.				X			CN
RE-S04-LA	Soil/Comp.				X			CN
RE-S05-LA	Soil/Comp.				X			CN
RE-S06-LA	Soil/Comp.				X			CN
RE-S07-AS	Soil/Comp.				X			CN

TOTALS:

Water ___
Soil 7
Sediment ___
Sludge ___
Other ___

LABORATORY RESOURCE REQUIREMENTS

Anticipated Date(s) of Sample Delivery: December 1984

Analytical Needs:

Analysis	Water Samples	Soil Samples	Totals
Organics			
Acid Extractables:			
Base/Neutrals:			
Pesticides:			
Organics (Other:):			
Total Metals (Specified: Pb, Cd, Cr):		7	7
EP Toxic Metals (Specified:):			
VOA:			
Other: Cyanide		7	7

PERSONNEL REQUIREMENTS

Field Personnel:

REGULATORY COORDINATION

EPA Project Officer: Joel Veater Phone No. 404/881-2234

Location: Atlanta, Georgia

Local Agency Contact: Steve Maurer Phone No. 205/271-7728

Location: Montgomery, Alabama

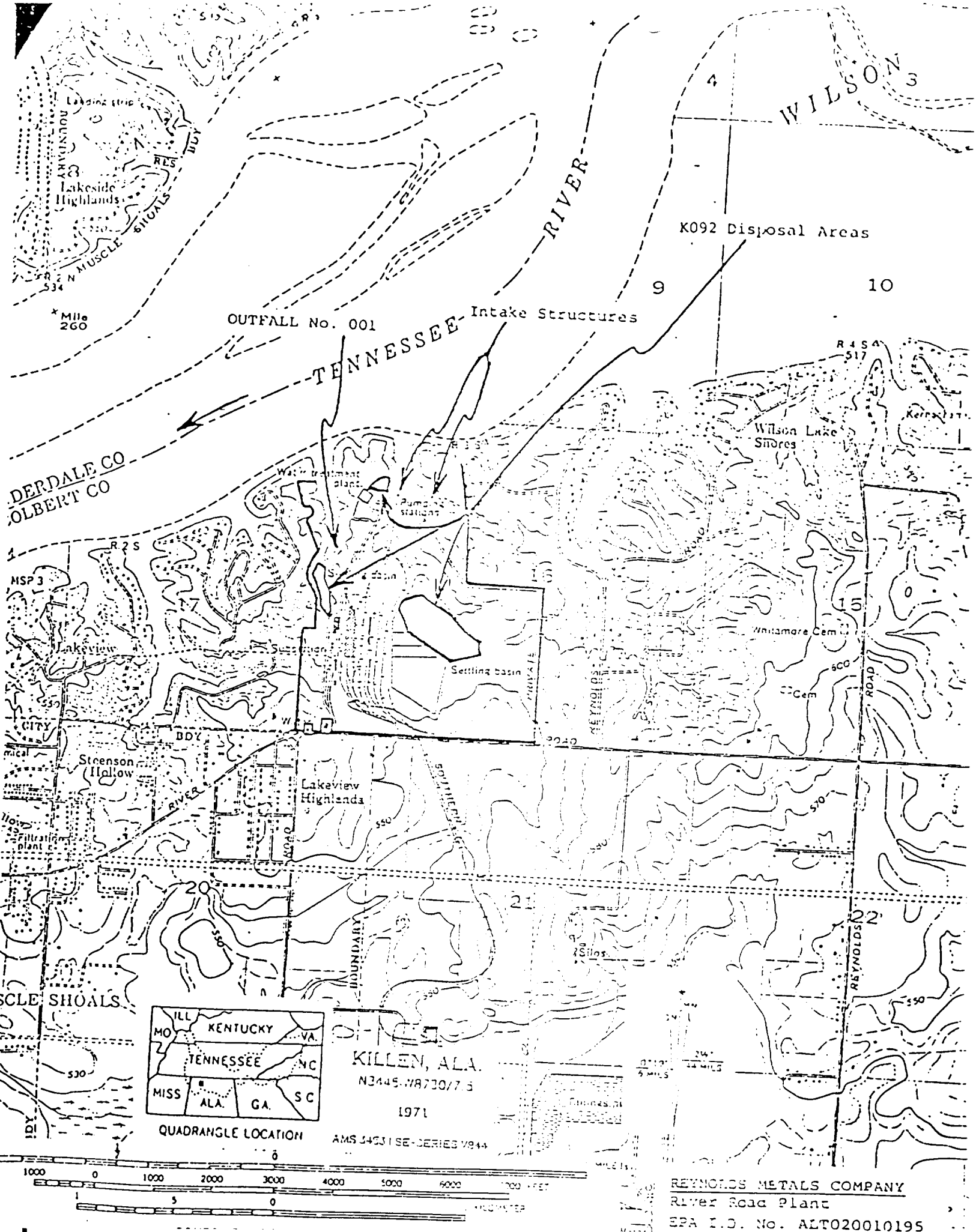
PROJECT SCHEDULE

Site Screening Study Form Transmittal Date:

Field Study Date:

Anticipated Data Receipt Date:

Station Number	Remarks
RE-S01-LA	Soil Boring from ~~2.6~~ 1.5 acre ~~landfill~~ disposal area.
RE-S02-LA	Soil Boring from ~~2.6~~ 1.5 acre ~~landfill~~. "
RE-S03-~~LA~~ SB	Soil Boring from 13.5 acre ~~landfill~~. "
RE-S04-~~LA~~ SB	Soil Boring from 13.5 acre ~~landfill~~. "
RE-S05-LA	Soil Boring from ~~1.5~~ 2.6 acre ~~landfill~~. "
RE-S06-LA	Soil Boring from ~~1.8~~ 2.6 acre ~~landfill~~. " Background sample.
RE-S07-AS	Background Sample
RE-S08-LA	FIELD REPLICATE OF RE-S03-SB



REYNOLDS METALS COMPANY
River Road Plant
EPA I.D. No. ALT020010195

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 1 - SITE INFORMATION AND ASSESSMENT

I. IDENTIFICATION

01 STATE: AL | 02 SITE NUMBER: D000652693

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site): REYNOLDS METALS COMPANY - RIVER ROAD PLANT

02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER: RIVER ROAD

03 CITY: MUSCLE SHOALS | 04 STATE: AL | 05 ZIP CODE: 35660 | 06 COUNTY: COULBERT | 07 COUNTY CODE: 033 | 08 CONG DIST: 05

09 COORDINATES LATITUDE: 34 47 37 | LONGITUDE: 087 36 00

10 DIRECTIONS TO SITE (Starting from nearest public road): TRAVELING EAST ON RIVER ROAD, SITE IS LOCATED ON THE LEFT SIDE OF THE ROAD BEYOND FORD ROAD INTERSECTION. (EAST OF MUSCLE SHOALS)

III. RESPONSIBLE PARTIES

01 OWNER (If known): REYNOLDS METALS COMPANY

02 STREET (Business, mailing, residential): 6601 WEST BROAD ST.

03 CITY: RICHMOND | 04 STATE: VA. | 05 ZIP CODE: 23261 | 06 TELEPHONE NUMBER: (804) 281-3871

07 OPERATOR (If known and different from owner):

08 STREET (Business, mailing, residential):

09 CITY: | 10 STATE: | 11 ZIP CODE: | 12 TELEPHONE NUMBER: ( )

13 TYPE OF OWNERSHIP (Check one)
- [X] A. PRIVATE
- [ ] B. FEDERAL: _____ (Agency name)
- [ ] C. STATE
- [ ] D. COUNTY
- [ ] E. MUNICIPAL
- [ ] F. OTHER: _____ (Specify)
- [ ] G. UNKNOWN

14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply)
- [X] A. RCRA 3001 DATE RECEIVED: 11/19/80 (MONTH DAY YEAR)
- [ ] B. UNCONTROLLED WASTE SITE (CERCLA 103 c) DATE RECEIVED: ___/___/___ (MONTH DAY YEAR)
- [ ] C. NONE

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION
- [ ] YES DATE ___/___/___ (MONTH DAY YEAR)
- [X] NO

BY (Check all that apply)
- [ ] A. EPA
- [ ] B. EPA CONTRACTOR
- [ ] C. STATE
- [ ] D. OTHER CONTRACTOR
- [ ] E. LOCAL HEALTH OFFICIAL
- [ ] F. OTHER: _____ (Specify)

CONTRACTOR NAME(S): _____

02 SITE STATUS (Check one)
- [X] A. ACTIVE
- [ ] B. INACTIVE
- [ ] C. UNKNOWN

03 YEARS OF OPERATION: 1940 (BEGINNING YEAR) | ____ (ENDING YEAR) [ ] UNKNOWN

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED

K092 - EMISSION CONTROL DUST SLUDGE FROM FERROMANGANESE PRODUCTION (REMOVED FROM EPA GENERIC LIST)

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION

LOW POTENTIAL HAZARD. THREE DISPOSAL AREAS WERE REPORTED AT THE SITE. HOWEVER K092 IS NO LONGER CONSIDERED HAZARDOUS SO THIS FACILITY DOES NOT FALL INTO THE CATEGORY OF A HAZARDOUS WASTE MANAGEMENT FACILITY. THE PART A WAS WITHDRAWN AND NO PRODUCTION HAS TAKEN PLACE SINCE 1980. THEY DO NOT GENERATE HAZARDOUS WASTE.

V. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents)
- [ ] A. HIGH (Inspection required promptly)
- [ ] B. MEDIUM (Inspection required)
- [ ] C. LOW (Inspection on time available basis)
- [X] D. NONE (No further action needed - complete current disposition)

VI. INFORMATION AVAILABLE FROM

01 CONTACT: STEVE MAURER SUM | 02 OF (Agency/Organization): ADEM | 03 TELEPHONE NUMBER: (205) 271-7728

04 PERSON RESPONSIBLE FOR ASSESSMENT: DONALEA DINSMORE | 05 AGENCY: | 06 ORGANIZATION: EPS | 07 TELEPHONE NUMBER: (601) 922-8242 | 08 DATE: 9/26/84 (MONTH DAY YEAR)

EPA FORM 2070-12 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

- A SOLID
- B POWDER, FINES
- C SLUDGE
- D OTHER (Specify)
- E SLURRY
- F LIQUID
- G GAS

02 WASTE QUANTITY AT SITE (Measures of waste quantities must be independent)

TONS
CUBIC YARDS
NO. OF DRUMS

03 WASTE CHARACTERISTICS (Check all that apply)

- A TOXIC
- B CORROSIVE
- C RADIOACTIVE
- D PERSISTENT
- E SOLUBLE
- F INFECTIOUS
- G FLAMMABLE
- H IGNITABLE
- I HIGHLY VOLATILE
- J EXPLOSIVE
- K REACTIVE
- L INCOMPATIBLE
- M NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE			
OLW	OILY WASTE			
SOL	SOLVENTS			
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS			

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION

V. FEEDSTOCKS (See Appendix for CAS Numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

ADEM FILES, LAND AND WATER, CONVERSATION WITH CHARLES BENT. OF REYNOLDS METALS

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER

II. HAZARDOUS CONDITIONS AND INCIDENTS *(Continued)*

01 ☐ J. DAMAGE TO FLORA — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ K. DAMAGE TO FAUNA — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION *(Include name(s) of species)*

01 ☐ L. CONTAMINATION OF FOOD CHAIN — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ M. UNSTABLE CONTAINMENT OF WASTES *(Spills/runoff/standing liquids/leaking drums)* — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 ☐ N. DAMAGE TO OFFSITE PROPERTY — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: _____

IV. COMMENTS

V. SOURCES OF INFORMATION *(Cite specific references, e.g., state files, sample analysis, reports)*

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☐ A. GROUNDWATER CONTAMINATION — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ — 04 NARRATIVE DESCRIPTION

01 ☐ B. SURFACE WATER CONTAMINATION — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

01 ☐ C. CONTAMINATION OF AIR — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ — 04 NARRATIVE DESCRIPTION

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ — 04 NARRATIVE DESCRIPTION

01 ☐ E. DIRECT CONTACT — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

01 ☐ F. CONTAMINATION OF SOIL — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 AREA POTENTIALLY AFFECTED: _____ (Acres) — 04 NARRATIVE DESCRIPTION

01 ☐ G. DRINKING WATER CONTAMINATION — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

01 ☐ H. WORKER EXPOSURE/INJURY — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 WORKERS POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

01 ☐ I. POPULATION EXPOSURE/INJURY — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

EPA

POTENTIAL HAZARDOUS WASTE SITE
TENTATIVE DISPOSITION

REGION	SITE NUMBER
IV	ALD000652693

File this form in the regional Hazardous Waste Log File and submit a copy to: U.S. Environmental Protection Agency, Site Tracking System Hazardous Waste Enforcement Task Force (EN-335), 401 M St., SW, Washington, DC 20460.

I. SITE IDENTIFICATION

A. SITE NAME	B. STREET	
Reynolds Metals Co. River Rd. Plant	River Road	
C. CITY	**D. STATE**	**E. ZIP CODE**
Muscle Shoals	AL	35660

II. TENTATIVE DISPOSITION

Indicate the recommended action(s) and agency(ies) that should be involved by marking 'X' in the appropriate boxes.

RECOMMENDATION	MARK 'X'	ACTION AGENCY: EPA	STATE	LOCAL	PRIVATE
A. NO ACTION NEEDED -- NO HAZARD					
B. INVESTIGATIVE ACTION(S) NEEDED (If yes, complete Section III.)	X		X		
C. REMEDIAL ACTION NEEDED (If yes, complete Section IV.)					
D. ENFORCEMENT ACTION NEEDED (If yes, specify in Part E whether the case will be primarily managed by the EPA or the State and what type of enforcement action is anticipated.)					

E. RATIONALE FOR DISPOSITION

Plant operated by Union Carbide from 1940 - 1980. Then purchased by Reynolds. Union Carbide practices could be better assessed by contact with company and site inspection.

F. INDICATE THE ESTIMATED DATE OF FINAL DISPOSITION (mo., day, & yr.)	G. IF A CASE DEVELOPMENT PLAN IS NECESSARY, INDICATE THE ESTIMATED DATE ON WHICH THE PLAN WILL BE DEVELOPED (mo., day, & yr.)

H. PREPARER INFORMATION

1. NAME	2. TELEPHONE NUMBER	3. DATE (mo., day, & yr.)
Camilla Warren	FTS 257-2234	11/06/84

III. INVESTIGATIVE ACTIVITY NEEDED

A. IDENTIFY ADDITIONAL INFORMATION NEEDED TO ACHIEVE A FINAL DISPOSITION.

Site Screening Inspection report from State

B. PROPOSED INVESTIGATIVE ACTIVITY (Detailed Information)

1. METHOD FOR OBTAINING NEEDED ADDITIONAL INFO.	2. SCHEDULED DATE OF ACTION (mo, day, & yr)	3. TO BE PERFORMED BY (EPA, Contractor, State, etc.)	4. ESTIMATED MANHOURS	5. REMARKS
a. TYPE OF SITE INSPECTION				
(1) screening		State contractor		public water supply
(2)				
(3)				
b. TYPE OF MONITORING				
(1)				
(2)				
c. TYPE OF SAMPLING				
(1)				
(2)				

Continued From Front

III. INVESTIGATIVE ACTIVITY NEEDED and PART B - PROPOSED INVESTIGATIVE ACTIVITY (Continued)

d. TYPE OF LAB ANALYSIS (1)				
(2)				
e. OTHER (specify) (1)				
(2)				

C. ELABORATE ON ANY OF THE INFORMATION PROVIDED IN PART B (on front & above) AS NEEDED TO IDENTIFY ADDITIONAL INVESTIGATIVE WORK.

D. ESTIMATED MANHOURS BY ACTION AGENCY

1. ACTION AGENCY	2. TOTAL ESTIMATED MANHOURS FOR INVESTIGATIVE ACTIVITIES	1. ACTION AGENCY	2. TOTAL ESTIMATED MANHOURS FOR INVESTIGATIVE ACTIVITIES
a. EPA		b. STATE	
c. EPA CONTRACTOR		d. OTHER (specify)	

IV. REMEDIAL ACTIONS

A. SHORT TERM/EMERGENCY STRATEGY (On Site & Off-Site) List all emergency actions needed to bring site under immediate control, e.g., restrict access, provide alternate water supply, etc. See instructions for a list of Key Words for each of the actions to be used in the space below.

1. ACTION	2. EST. START DATE (mo, day, & yr)	3. EST. END DATE (mo, day, & yr)	4. ACTION AGENCY (EPA, State, Private Party)	5. ESTIMATED COST	6. SPECIFY 311 OR OTHER ACTION; INDICATE THE MAGNITUDE OF THE WORK REQUIRED
				$	
				$	
				$	
				$	
				$	
				$	

B. LONG TERM STRATEGY (On Site & Off-Site): List all long term solutions, e.g., excavation, removal, ground water monitoring wells, etc. See instructions for a list of Key Words for each of the actions to be used in the spaces below.

1. ACTION	2. EST. START DATE (mo, day, & yr)	3. EST. END DATE (mo, day, & yr)	4. ACTION AGENCY (EPA, State Private Party)	5. ESTIMATED COST	6. SPECIFY 311 OR OTHER ACTION; INDICATE THE MAGNITUDE OF THE WORK REQUIRED
				$	
				$	
				$	
				$	
				$	
				$	

C. ESTIMATED MANHOURS AND COST BY ACTION AGENCY

1. ACTION AGENCY	2. TOTAL EST. MANHOURS FOR REMEDIAL ACTIVITIES	3. TOTAL EST. COST FOR REMEDIAL ACTIVITIES	1. ACTION AGENCY	2. TOTAL EST. MANHOURS FOR REMEDIAL ACTIVITIES	3. TOTAL EST. COST FOR REMEDIAL ACTIVITIES
a. EPA			b. STATE		
c. PRIVATE PARTIES			d. OTHER (specify)		

2. PROJECT MANAGEMENT SUM 'Y

Site Name: REYNOLDS METALS COMPANY - RIVER ROAD PLANT

Site Number: ALD000652693

Owner: REYNOLDS METALS CO.

Operator: REYNOLDS METALS CO.

Site Status: [X] Active [ ] Inactive [ ] Unknown

Priority: [ ] High [ ] Medium [ ] Low [X] None

3. FINAL DISPOSITION

I. EPS Final Review - Date: 9/26/84

Comments:

Site Inspection Required [ ] Yes [X] No

II. ADEM Review - Date: 10/10/84 SCM

Comments:

Follow-up Action Required [ ] Yes [X] No

III. Final Disposition:

Review & revise Date:

Edited & correct Date:

Transmitted Date:

File close-out Date:

Initiate site inspection Date:

4. ADDITIONAL COMMENTS (ONGOING & FINAL)

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
EPS FORM 3012-III

INDUSTRIAL NARRATIVE SHEET

1. Site Identification:

Site number: ALD000652693

Site name: Reynolds Metals Company - River Road Plant

Site county: Colbert

2. Industrial Narrative Summary:

Company Name: Reynolds Metals Company - River Road Plant

Address: P. O. Box 1400
Sheffield, AL 35660

Telephone No.: 804/281-2918

Contact: Mr. Charles Bent

Discussion: Reynolds Metals Company purchased the River Road facility in 1980 from Union Carbide. This facility was involved in manufacturing ferromanganese alloys by the electric arc furnace process. Reynolds had anticipated using this facility; however, the economy has influenced this decision. Therefore, this facility has not been used since 1980. Reynolds has updated the status to indicate that this site does not generate, treat, store or dispose of hazardous wastes. The company had initially filed a Part A application based on the listing of K092 - emission control dust from ferromanganese production. They indicated three disposal areas on this application and filed protectively so they would not be required to submit a Part A and a Part B all at one time. Subsequently EPA has removed this waste from the list of generic wastes. Reynolds requested that the Part A application be withdrawn and they no longer generate any hazardous waste at this site.

A review of the Union Carbide AWIC files indicate that operations initially began at this site in or around 1940. The pollution control information available indicated that the only substance produced at this plant which was hazardous was cyanide. In addition, the records indicate that this facility has used cyanide destruction techniques since they began operations. Prior to 1965, the company operated a calcium carbide furnace at the site. Cyanide

treatment was indicated to be adequate. There are no other references to any activities at this site which would be considered as hazardous waste generation.

3. Disposition:

No further action at this site under this program. Reynolds has not generated hazardous waste at this site. The former owner, Union Carbide, did have a cyanide waste; however, it went through cyanide destruction. The wastes which were initially considered to be hazardous have been removed from EPA's list and therefore the company has withdrawn its Part A and is not a generator of hazardous wastes.

4. Comments:

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
EPS FORM 3012-II

TELEPHONE LOG SHEET

1. Site Identification:
   Site number: ALD000652693
   Site name: Reynolds Metals Company - River Road Plant

2. Interview Data: (Party called)
   Name: Chuck Bent
   Position: Staff Environmental Engineer
   Firm: Reynolds Metals Co.
   Address: 6601 West Broad St.
   Richmond, Va. 23261
   Telephone No.: *(804) 281-2918

3. EPS Analyst Data:
   Name: Donalea Dinsmore
   Purpose of call: Question River Road facility and the two numbers that are present. Are there one or two facilities.
   Form 2070-12 (7-81) P.N.
   Date of call: 9-26-84

4. Interview Narrative Summary: There is only one facility on River Road. Reynolds never caught the discrepancy with the I.D. numbers. Mr. Bent reviewed the site names and numbers for the Alabama facilities. Present status given. The River Road facility was purchased about the time of RCRA and Reynolds did not want to get caught with a facility that didn't have interim status and then have to file a part A and a part B. At that time there were two ponds with K092 waste in them. This was listed at that time and so they claimed it. The association for ferromanganese production protested its listing and submitted testing to indicate that the waste wasn't hazardous. EPA subsequently removed it from the generic listing. They really haven't had any production activities at this site since they purchased it as the economy discouraged it. They have been dismantling the plant ever since. Only now are they about to begin any activities. Map indicated that the site was originally owned by Union Carbide. Mr. Bent has no knowlege of the activities of Union Carbide during their ownership. x No hazarddus waste has been produced at this site since 1980.

5. Disposition/Comments:
Mr. Bent will be called again regarding the Reynolds facilities not addressed in this conversatior and past activities will be discussed.. He is the contact for all these sites.

6. Comments: Any additional sites used by this company?
   Location:
   Dates of use:
   Description of waste:

   Comments:

ENVIRONMENTAL PROTECTION SYSTEMS, INC.

Alabama RCRA 3012 Site Ranking Scheme
EPS Form 3012-V

Site Name REYNOLDS METALS RIVER ROAD PLANT
Site Number ALD 000652693

Preliminary Assessment Ranking Scheme to Determine Which Sites Merit Further Action.

(Select one answer for each of the following seven questions)

1. Are Hazardous Substances Present?		
A. Confirmed on site!	10 points	
B. Suspected at site!	5 points	
C. It is unknown!	2 points	
D. No hazardous substances	0 points	X
E. RCRA facility only!	0 points	
2. Is There a Pollution Dispersal Pathway?		
A. Direct to surface and/or groundwater.	5 points	
B. Indirect to surface and/or groundwater.	4 points	
C. Suspected to surface and/or groundwater.	3 points	
D. Not known for sure.	2 points	
E. No pathway.	0 points	
3. Characteristics of Human Population?		
A. High density.	5 points	
B. Medium density.	4 points	
C. Low density.	3 points	
D. No population.	2 points	
4. Characteristics of Natural Environment?		
A. Critical habitat including endangered species, etc.	5 points	
B. Sensitive habitat.	3 points	
C. Common less sensitive habitat.	2 points	
5. How is Human Population Affected By Site?		
A. Public utility of drinking water from site.	5 points	
B. Direct public access to site.	4 points	
C. Public access to affected surface water.	3 points	
D. Only potential for human population contact.	2 points	
E. Low or no potential for contact.	1 point	
6. Facility Management Practices at Site?		
A. Site actively supervised and managed currently with monitoring reports and other permit and report requirements.	1 point	
B. Site inadequately managed records not up-to-date.	3 points	

C. Site not currently managed or regulated. — 4 points _____

D. Abandon site. — 5 points _____

7. Potential Responsible Parties for Site Operations?

A. Controlling party identified and accepts responsibility for site. — 1 point _____

B. Suspected controlling party identified but does not accept responsibility for site. — 4 points _____

C. No responsible party available. — 5 points _____

Ranking Score =

$$\frac{0}{\#1}\left[\times \frac{\quad}{\#2} + \frac{\quad}{\#4} + \left(\frac{\quad}{\#3} \times \frac{NA}{\#5}\right) + \frac{\quad}{\#6} + \frac{\quad}{\#7}\right]$$

TABLE 1. Ranking Assessment

NUMERICAL RANGE	PRIORITY ASSESSMENT
0-50	NONE
50-150	LOW
150-300	MEDIUM
300-450	HIGH

Ranking Score: 0

Priority Assessment: NONE

POTENTIAL HAZARDOUS WASTE SI"
PRELIMINARY ASSESSMENT
EPS FORM 3012-I
EPS ANALYST/REVIEWER CHECKLIST

Site No. ALD000652693
Site Name REYNOLDS METALS RIVER ROAD PLANT

nstructions: To be used in conjunction with EPA Form 2070-12 (7-81). Attach on inside front of site folder. Initial and date for all assessment entries under appropriate part/subpart as completed. initial/date in black for final assessment; in red if higher level (additional) assessment is in order. Follow same procedure for review process.

:eview Codes: 1-Toxicology Review; 2-Chemical Review; 3-Ecology Review; 4-Chemical Engineer Review; 5-Geotechnical Review; 6-Project Manager Review; 7-Final Review

1. ANALYST/REVIEW STATUS

'orm 2070 'art Number	Analyst/ Date	Review Code 1	Review Code 2	Review Code 3	Review Code 4	Review Code 5	Review Code 6	Review Code 7
.I.-VI.	DD 9/26/84							
							GW 9/26	GW 9/26
.I.								
.II.								
.III.								
.IV.								
.V.								
.VI.	DD						GW	GW
.I.								
.II.A								
.II.B								
.II.C								
.II.D								
.II.E								
.II.F								
.II.G								
.II.H								
.II.I								
.II.J								
.II.K								
.II.L								
.II.M								
.II.N								
.II.O								
.II.P								
.III.								
.IV.								
.V.								

No further assessment/review required, enter NA

Elliot County

REYNOLDS ALUMINUM

REYNOLDS METALS COMPANY • RICHMOND, VIRGINIA 23861

MAR 1983
RECEIVED
Solid Waste

March 3, 1983

CERTIFIED MAIL - RETURN
RECEIPT REQUESTED

Division of Solid Waste and Vector Control
Department of Public Health
State Office Building
Montgomery, Alabama 36130

Re: Subsequent Notification Form
River Road Plant
Sheffield, Alabama
EPA ID: ALD000652693

Dear Sir:

Reynolds Metals Company has reviewed the hazardous waste management regulations and amendments, promulgated by Alabama's Division of Solid Waste and Vector Control. These continuing review activities have led Reynolds to the conclusion that our River Road Plant is not, at this time, a generator of hazardous wastes. Neither are we currently involved in the storage, treatment, transportation or disposal of hazardous wastes.

Please find enclosed an amended notification form which supersedes all previously submitted notification forms. Reynolds hereby requests that your Division update its lists, computer records, etc. of hazardous waste management facilities to reflect the information contained in the revised notification. It is, however, our desire to retain our previously issued U. S. Environmental Protection Agency Identification Number. Therefore, the attached notification form does not list any type of hazardous waste activity or any description of hazardous waste pursuant to Items VI and IX.

If you have any questions or need additional clarification, please feel free to contact me at (804) 281-2918.

Sincerely,

C. R. Bent
Staff Environmental Engineer
Environmental Control Department

CRB/ych
cc: U. S. EPA, Region IV

REYNOLDS ALUMINUM
REYNOLDS METALS COMPANY • RICHMOND, VIRGINIA 23261

JAN 1982
RECEIVED
Health Dept.
Solid Waste

1982 January 08

CERTIFIED MAIL RETURN RECEIPT REQUESTED

Mr. Bernard E. Cox, Jr., Chief
Hazardous and Industrial Waste Section
Division of Solid & Hazardous Waste
Environmental Health Administration
State Office Building
Montgomery, Alabama 36130

Re: Reynolds Metals Company
River Road Plant
Hazardous Waste Activities

Dear Mr. Cox:

In response to your letter of 1981 December 04, please be advised that our Notification Form and our Part A Permit Application for our River Road Plant were completed and submitted based on EPA's then current regulations which listed emission control dust sludge from ferromanganese production (K092) as a hazardous waste. Subsequently, regulatory changes by EPA eliminated this waste from its list of listed hazardous wastes. Therefore, there is no need for a Hazardous Waste Permit for our River Road Plant and we wish to rescind our previous Notification Form and Part A Permit Application.

If I can be of further assistance please do not hesitate to contact me at 804/281-2918.

Sincerely,

C. R. Bent
Staff Environmental Engineer
Environmental Control Department

/ct

Inspection File - Reynolds Metals Co., Colbert Co.

RECEIVED
AUG 12 1981
STATE HEALTH DEPARTMENT
DIVISION OF SOLID WASTE

REYNOLDS ALUMINUM

REYNOLDS METALS COMPANY • RICHMOND, VIRGINIA 23261

1981 August 10

Certified Mail Return Receipt Requested

David Roberson
Environmental Engineer
Division of Solid & Hazardous Waste
Public Health Services Building
434 Monroe Street
Montgomery, Alabama 36130

Re: Inspection of Reynolds Metals Company's River Road Facility

Dear Mr. Roberson:

This letter is to confirm our telephone conversation of Friday, 1981 August 07, in which you cancelled your proposed August 12th inspection of our River Road facility. Please be advised that our River Road facility does not, at this time, generate any hazardous wastes. Neither does the River Road facility store, treat or dispose of any hazardous wastes. In fact there are at present no industrial activities whatever at this facility.

Our Notification Form and our Part A Permit Application were completed and submitted based on EPA's then current regulations. Completion of our testing program revealed that none of plant generated materials were hazardous. Subsequently, regulatory changes by EPA eliminated the listed hazardous waste which was a part of our previous submissions. Therefore, at this time, no hazardous wastes are generated, stored, treated or disposed of at our River Road facility.

If I can be of further assistance please do not hesitate to contact me at 804/281-2918.

Sincerely,

C. R. Bent
Staff Environmental Engineer
Environmental Control Department

/ct

cc: Robert Downie

Union Carbide
Sheffield

STATE OF ALABAMA

WATER IMPROVEMENT COMMISSION

ROOMS 324-326
STATE OFFICE BUILDING
MONTGOMERY 4, ALABAMA

IRA L. MYERS, M. D.
CHAIRMAN

ARTHUR N. BECK
TECHNICAL SECRETARY

July 13, 1971

Mr. Gregg Fawkes
Center for Study of Responsive Law
1156 19th Street
Washington, D. C. 20036

Dear Mr. Fawkes:

I have your questionnaire dated June 8 which was received in this office on June 15. I regret that due to the press of other business, namely that connected with implementation of the 1899 Refuse Act, I have not been able to respond earlier.

You indicate that your group is conducting an investigation of the Union Carbide Corporation and are interested in the quality of pollution control at the Union Carbide facility located in Alabama at Sheffield. In the foregoing I will attempt to provide you with the present status of the waste water discharge at this plant as well as to acquaint you with some background related to the waste discharges.

We are, of course, pleased to provide you with the information you wish although I should point out that much of the information listed in the questionnaire is not applicable to the Carbide facility at Sheffield.

The Sheffield plant manufactures ferro-silicon alloys in electric furnaces. Cooling water is pumped from Lake Wilson and is used without treatment. It is not contaminated other than being increased in temperature before being returned to the lake after retention in a basin designed to reduce the temperature. Contaminated wastes from the plant result from the washing of flue gases in gas scrubbers which remove noncombustible materials before discharge to the atmosphere. The solids removed consist principally of carbon and silica. Cyanide is also present in the gases and is removed in the scrubbing process. Waste waters from the gas scrubbing operation flow to a waste water treatment system described as follows. Cyanide is destroyed by the addition of chlorine following pH adjustment. From this phase of the treatment facility the waste is then pumped to a clariflocculator where a

coagulant aid is added to remove the bulk of the suspended material. The effluent from the clariflocculator then flows to a series of settling ponds for further removal of suspended material. The overflow from the final settling pond discharges to an embayment of Lake Wilson at a point approximately 1½ miles upstream from Wilson Dam.

Sanitary wastes are treated in a secondary-type aeration plant. The effluent from the sanitary plant is chlorinated prior to mixing with the treated industrial wastes.

Prior to 1965 the company operated a calcium carbide furnace at the Sheffield plant. This operation resulted in larger quantities of cyanide being removed in the gas scrubber system. While adequate treatment of cyanide has been provided at the plant since commencement of operation, the removal of suspended material was not entirely satisfactory until approximately three years ago. At that time, additional sedimentation basins were installed for removal of suspended materials. Following installation of these improvements, together with other refinements in the treatment system, the Commission issued a waste discharge permit on August 17, 1970, limiting the characteristics of the wastes discharged to the following: Cyanide 0.025 ppm, Suspended Solids 25 ppm, pH 6.0 to 9.5, and temperature rise 15 degrees above intake. A copy of the waste discharge permit is enclosed. As is true with all major water users in Alabama, this agency has required Union Carbide to submit daily monitoring reports to this agency on a monthly basis. Since completion of the improvements referred to above, the company has consistently met the effluent requirements specified by the Commission.

Prior to the completion of the improvements referred to above, carbonaceous solids were discharged by the plant into the small embayment receiving the effluent. This material accumulated in the bottom of the embayment and as a result of fluctuations of the water level, wind action and other physical phenomena, solids appeared downstream and were the subject of complaints from boat and property owners. The matter of removal of material discharged in previous years has been the subject of investigation by this office and other state and Federal agencies. The company has also employed Florence State University personnel to investigate the feasibility and effect of the removal of such material. At this point it appears that it would not be desirable to attempt to remove the previously deposited material in the small embayment as it has been found that approximately 12 inches of silt and organic material overlays the carbonaceous solids. It is speculated by those who have investigated the problem that attempts to remove the previously deposited material would create an extremely undesirable condition downstream. The matter is being further studied and a final decision has not been reached at this time.

I have attempted to provide you with the information listed in your questionnaire but in the event I have not covered all information you wish

I would be happy to hear from you. It occurs to me that a write-up describing waste water treatment facilities at this plant which appeared on Page 21 of our 1967-68 Biennial Report might be of interest to you. I am enclosing a copy of the report for your information.

Yours very truly,

John M. Bolton
Assistant Director, Technical Staff
Water Improvement Commission

JMB/jb

Enclosures

ELITE type (12 characters) in the unshaded areas only.

Form Approved OMB No. 158-S79016
GPO No. 0246-EPA-OT

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTIFICATION OF HAZARDOUS WASTE ACTIVITY

INSTALLATION'S EPA I.D. NO.	
I. NAME OF INSTALLATION	
II. INSTALLATION MAILING ADDRESS	PLEASE PLACE LABEL IN THIS SPACE
III. LOCATION OF INSTALLATION	

INSTRUCTIONS: If you received a preprinted label, affix it in the space at left. If any of the information on the label is incorrect, draw a line through it and supply the correct information in the appropriate section below. If the label is complete and correct, leave Items I, II, and III below blank. If you did not receive a preprinted label, complete all items. "Installation" means a single site where hazardous waste is generated, treated, stored and/or disposed of, or a transporter's principal place of business. Please refer to the INSTRUCTIONS FOR FILING NOTIFICATION before completing this form. The information requested herein is required by law *(Section 3010 of the Resource Conservation and Recovery Act).*

FOR OFFICIAL USE ONLY

COMMENTS: C

INSTALLATION'S EPA I.D. NUMBER: F 1 — APPROVED: — DATE RECEIVED (yr., mo., & day):

I. NAME OF INSTALLATION

RIVER ROAD PLANT

II. INSTALLATION MAILING ADDRESS

STREET OR P.O. BOX: 3 P O BOX 1400

CITY OR TOWN: 4 SHEFFIELD — ST.: AL — ZIP CODE: 35660

III. LOCATION OF INSTALLATION

STREET OR ROUTE NUMBER: 5 RIVER ROAD

CITY OR TOWN: 6 MUSCLE SHOALS — ST.: AL — ZIP CODE: 35660

IV. INSTALLATION CONTACT

NAME AND TITLE (last, first, & job title): 2 BENT, CHARLES ENV. ENGINEER — PHONE NO. (area code & no.): 804.281.2918

V. OWNERSHIP

A. NAME OF INSTALLATION'S LEGAL OWNER: 8 REYNOLDS METALS COMPANY

B. TYPE OF OWNERSHIP (enter the appropriate letter into box): F = FEDERAL; M = NON-FEDERAL — M

VI. TYPE OF HAZARDOUS WASTE ACTIVITY (enter "X" in the appropriate box(es))

- [ ] A. GENERATION
- [ ] B. TRANSPORTATION (complete item VII)
- [ ] C. TREAT/STORE/DISPOSE
- [ ] D. UNDERGROUND INJECTION

VII. MODE OF TRANSPORTATION (transporters only – enter "X" in the appropriate box(es))

- [ ] A. AIR
- [ ] B. RAIL
- [ ] C. HIGHWAY
- [ ] D. WATER
- [ ] E. OTHER (specify):

VIII. FIRST OR SUBSEQUENT NOTIFICATION

Mark "X" in the appropriate box to indicate whether this is your installation's first notification of hazardous waste activity or a subsequent notification. If this is not your first notification, enter your Installation's EPA I.D. Number in the space provided below.

- [ ] A. FIRST NOTIFICATION
- [x] B. SUBSEQUENT NOTIFICATION (complete item C)

C. INSTALLATION'S EPA I.D. NO.: ALD000652693

IX. DESCRIPTION OF HAZARDOUS WASTES

Please go to the reverse of this form and provide the requested information.

EPA Form 8700-12 (6-80)

CONTINUE ON REVERSE

I.D. – FOR OFFICIAL USE ONLY

W | | 1

IX. DESCRIPTION OF HAZARDOUS WASTES *(continued from front)*

A. HAZARDOUS WASTES FROM NON–SPECIFIC SOURCES. Enter the four–digit number from 40 CFR Part 261.31 for each listed hazardous waste from non–specific sources your installation handles. Use additional sheets if necessary.

1	2	3	4	5	6
7	8	9	10	11	12

B. HAZARDOUS WASTES FROM SPECIFIC SOURCES. Enter the four–digit number from 40 CFR Part 261.32 for each listed hazardous waste from specific industrial sources your installation handles. Use additional sheets if necessary.

13	14	15	16	17	18
19	20	21	22	23	24
25	26	27	28	29	30

C. COMMERCIAL CHEMICAL PRODUCT HAZARDOUS WASTES. Enter the four–digit number from 40 CFR Part 261.33 for each chemical substance your installation handles which may be a hazardous waste. Use additional sheets if necessary.

31	32	33	34	35	36
37	38	39	40	41	42
43	44	45	46	47	48

D. LISTED INFECTIOUS WASTES. Enter the four–digit number from 40 CFR Part 261.34 for each listed hazardous waste from hospitals, veterinary hospitals, medical and research laboratories your installation handles. Use additional sheets if necessary.

49	50	51	52	53	54

E. CHARACTERISTICS OF NON–LISTED HAZARDOUS WASTES. Mark "X" in the boxes corresponding to the characteristics of non–listed hazardous wastes your installation handles. *(See 40 CFR Parts 261.21 – 261.24.)*

☐ 1. IGNITABLE (D001) ☐ 2. CORROSIVE (D002) ☐ 3. REACTIVE (D003) ☐ 4. TOXIC (D000)

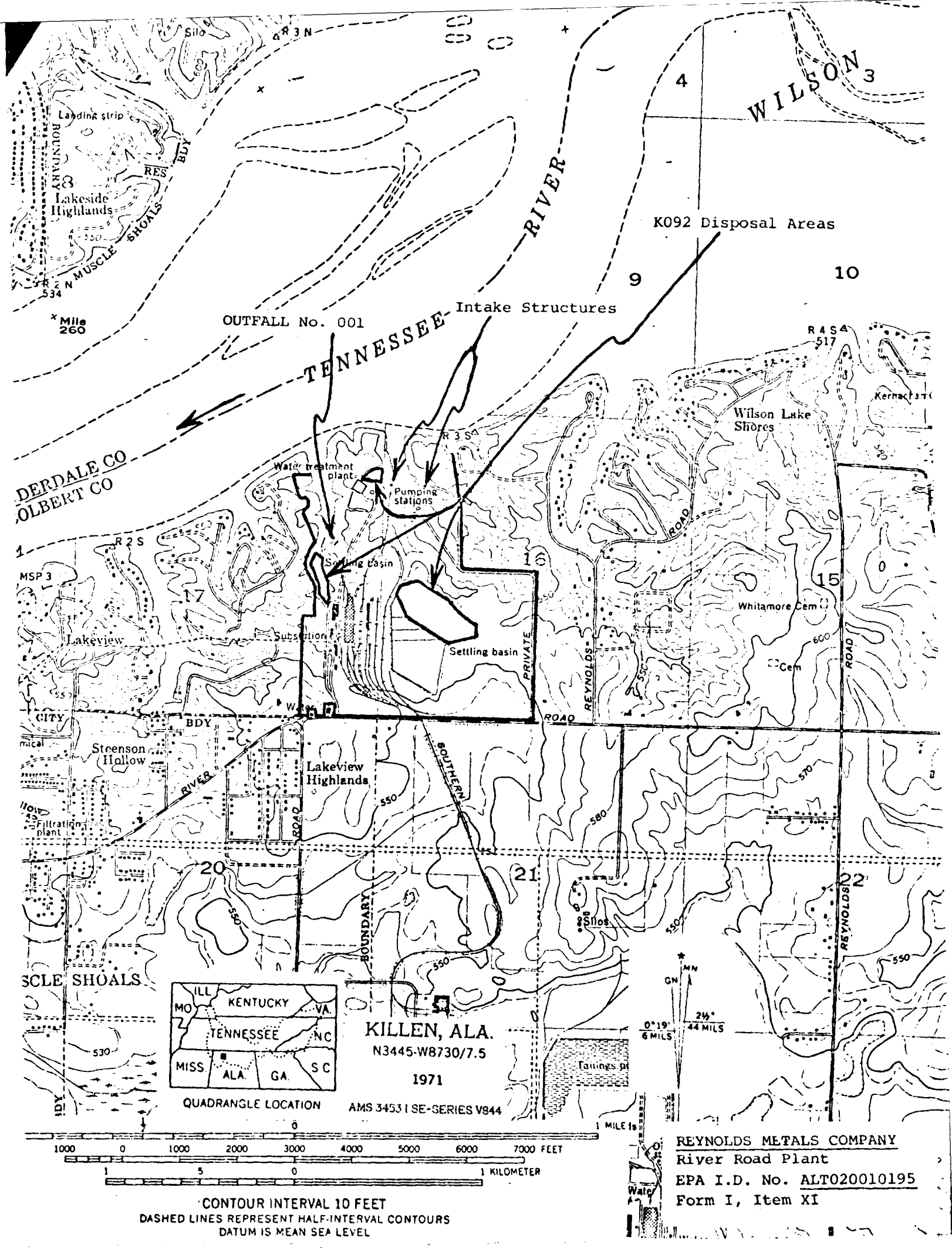
X. CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

SIGNATURE	NAME & OFFICIAL TITLE *(type or print)*	DATE SIGNED
W D Pipes	W. D. Pipes Plant Manager	14 JAN. 1983

EPA Form 8700-12 (6-80) REVERSE

DETACH ▶

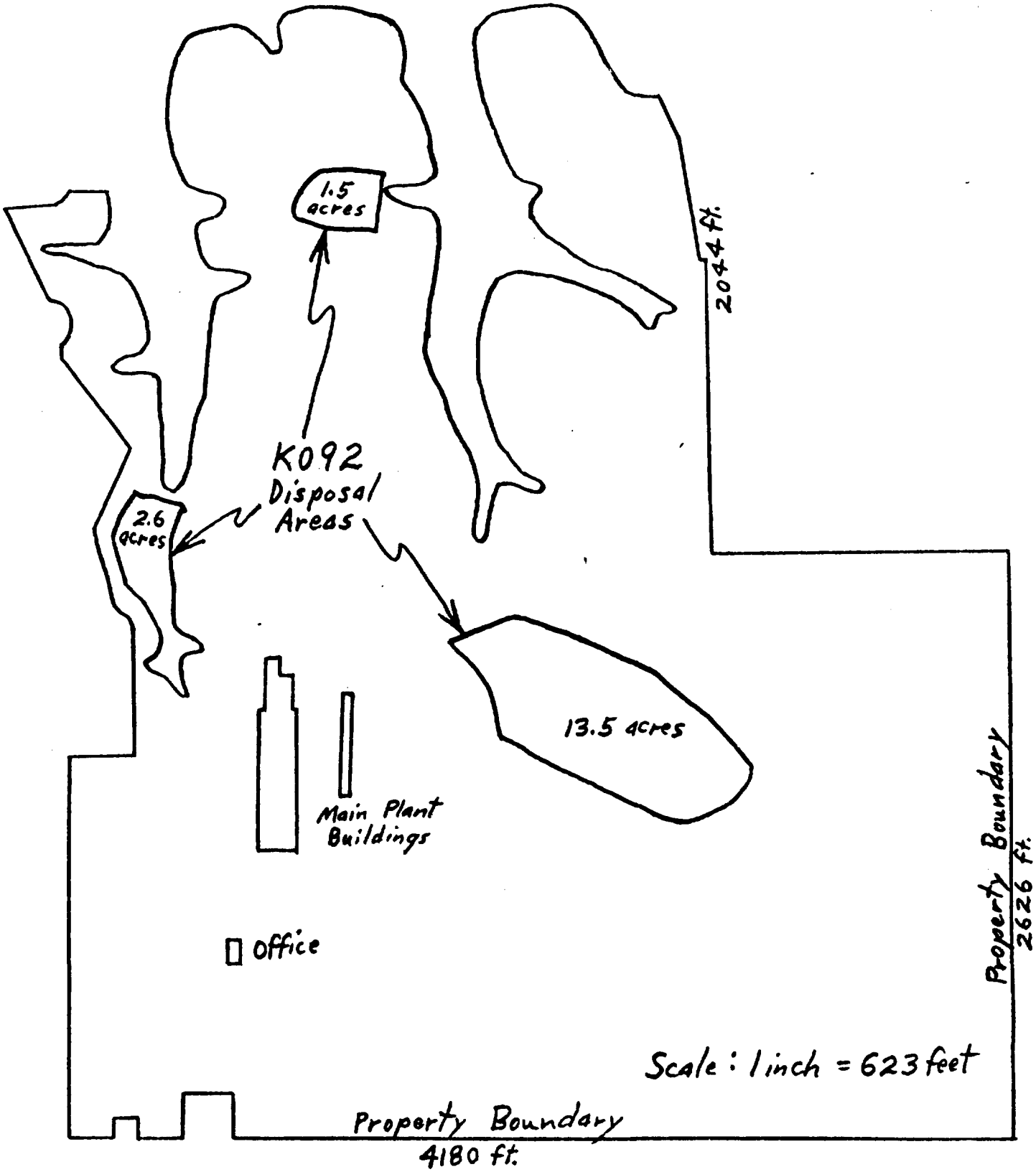


REYNOLDS METALS COMPANY
River Road Plant
EPA I.D. No. ALT020010195
Form I, Item XI

Form Approved OMB No. 158-S80004

FACILITY DRAWING *(see page 4)*

EPA I.D. No. ALT020010195
Form 3, Item V.



We do not have on NOTIS Check this → ?

EPA

POTENTIAL HAZARDOUS WASTE SITE
IDENTIFICATION AND PRELIMINARY ASSESSMENT

REGION | SITE NUMBER (to be assigned by Hq) ALD 000 652 693

NOTE: This form is completed for each potential hazardous waste site to help set priorities for site inspection. The information submitted on this form is based on available records and may be updated on subsequent forms as a result of additional inquiries and on-site inspections.

ALD 000 652 693

GENERAL INSTRUCTIONS: Complete Sections I and III through X as completely as possible before Section II (*Preliminary Assessment*). File this form in the Regional Hazardous Waste Log File and submit a copy to: U.S. Environmental Protection Agency; Site Tracking System; Hazardous Waste Enforcement Task Force (*EN-335*); 401 M St., SW; Washington, DC 20460.

ALD000652693 COLBERT
REYNOLDS METALS CO/RIVER RD PLANT
RIVER RD
FLORENCE AL 35631
BENT, CHARLES, STAFF ENV* 8042812918

IFICATION

STREET (or other identifier): RIVER ROAD

STATE | E. ZIP CODE | F. COUNTY NAME

2. TELEPHONE NUMBER

H. TYPE OF OWNERSHIP

☐ 1. FEDERAL ☐ 2. STATE ☐ 3. COUNTY ☐ 4. MUNICIPAL ☐ 5. PRIVATE ☐ 6. UNKNOWN

I. SITE DESCRIPTION

"103-C NOTIFICATION" DATE: 810609
DAN COOPER OR BUDDY COX
PHONE: 205-832-6726

K. DATE IDENTIFIED (mo., day, & yr.)

2. TELEPHONE NUMBER

II. PRELIMINARY ASSESSMENT (complete this section last)

A. APPARENT SERIOUSNESS OF PROBLEM

☐ 1. HIGH ☐ 2. MEDIUM ☐ 3. LOW ☐ 4. NONE ☒ 5. UNKNOWN

B. RECOMMENDATION

☐ 1. NO ACTION NEEDED (*no hazard*)

☒ 3. SITE INSPECTION NEEDED
a. TENTATIVELY SCHEDULED FOR: Dec 1982
b. WILL BE PERFORMED BY: State / EPA

☐ 2. IMMEDIATE SITE INSPECTION NEEDED
a. TENTATIVELY SCHEDULED FOR:
b. WILL BE PERFORMED BY:

☐ 4. SITE INSPECTION NEEDED (*low priority*)

C. PREPARER INFORMATION

1. NAME | 2. TELEPHONE NUMBER | 3. DATE (mo., day, & yr.) 82 05 11

III. SITE INFORMATION

A. SITE STATUS

☐ 1. ACTIVE (*Those industrial or municipal sites which are being used for waste treatment, storage, or disposal on a continuing basis, even if infrequently.*)

☐ 2. INACTIVE (*Those sites which no longer receive wastes.*)

☐ 3. OTHER (specify): (*Those sites that include such incidents like "midnight dumping" where no regular or continuing use of the site for waste disposal has occurred.*)

B. IS GENERATOR ON SITE?

☐ 1. NO ☐ 2. YES (*specify generator's four-digit SIC Code*):

C. AREA OF SITE (*in acres*)

D. IF APPARENT SERIOUSNESS OF SITE IS HIGH, SPECIFY COORDINATES
1. LATITUDE (*deg.-min.-sec.*) | 2. LONGITUDE (*deg.-min.-sec.*)

E. ARE THERE BUILDINGS ON THE SITE?

☐ 1. NO ☐ 2. YES (*specify*):

POTENTIAL HAZARDOUS WASTE SITE IDENTIFICATION AND PRELIMINARY ASSESSMENT

REGION	SITE NUMBER (to be assigned by Hq)

NOTE: This form is completed for each potential hazardous waste site to help set priorities for site inspection. The information subm... ...ed on subsequent forms as a result of additional inquiries and

ALD000657693 COLBERT
REYNOLDS METALS CO/RIVER RD PLANT
RIVER RD
FLORENCE AL 35631

GE... completely as possible before Section II (Preliminary Ass... and submit a copy to: U.S. Environmental Protection Agc... ...rce (EN-335); 401 M St., SW; Washington, DC 20460.

...CATION

A. SI... ...REET (or other identifier)

C. CITY	D. STATE	E. ZIP CODE	F. COUNTY NAME

G. OWNER/OPERATOR (if known)

1. NAME	2. TELEPHONE NUMBER

H. TYPE OF OWNERSHIP

☐ 1. FEDERAL ☐ 2. STATE ☐ 3. COUNTY ☐ 4. MUNICIPAL ☐ 5. PRIVATE ☐ 6. UNKNOWN

I. SITE DESCRIPTION

J. HOW IDENTIFIED (i.e., citizen's complaints, OSHA citations, etc.)	K. DATE IDENTIFIED (mo., day, & yr.)

L. PRINCIPAL STATE CONTACT

1. NAME	2. TELEPHONE NUMBER

II. PRELIMINARY ASSESSMENT (complete this section last)

A. APPARENT SERIOUSNESS OF PROBLEM

☐ 1. HIGH ☐ 2. MEDIUM ☐ 3. LOW ☐ 4. NONE ☐ 5. UNKNOWN

B. RECOMMENDATION

☐ 1. NO ACTION NEEDED (no hazard)

☐ 2. IMMEDIATE SITE INSPECTION NEEDED
a. TENTATIVELY SCHEDULED FOR: _____
b. WILL BE PERFORMED BY: _____

☐ 3. SITE INSPECTION NEEDED
a. TENTATIVELY SCHEDULED FOR: _____
b. WILL BE PERFORMED BY: _____

☐ 4. SITE INSPECTION NEEDED (low priority)

C. PREPARER INFORMATION

1. NAME	2. TELEPHONE NUMBER	3. DATE (mo., day, & yr.)

III. SITE INFORMATION

A. SITE STATUS

☐ 1. ACTIVE (Those industrial or municipal sites which are being used for waste treatment, storage, or disposal on a continuing basis, even if infrequently.)

☐ 2. INACTIVE (Those sites which no longer receive wastes.)

☐ 3. OTHER (specify): _____ (Those sites that include such incidents like "midnight dumping" where no regular or continuing use of the site for waste disposal has occurred.)

B. IS GENERATOR ON SITE?

☐ 1. NO ☐ 2. YES (specify generator's four-digit SIC Code): _____

C. AREA OF SITE (in acres)	D. IF APPARENT SERIOUSNESS OF SITE IS HIGH, SPECIFY COORDINATES	
	1. LATITUDE (deg.-min.-sec.)	2. LONGITUDE (deg.-min.-sec.)

E. ARE THERE BUILDINGS ON THE SITE?

☐ 1. NO ☐ 2. YES (specify): _____

T2070-2 (10-79)

Continued From Front

IV. CHARACTERIZATION OF SITE ACTIVITY

Indicate the major site activity(ies) and details relating to each activity by marking 'X' in the appropriate boxes.

'X'	A. TRANSPORTER	'X'	B. STORER	'X'	C. TREATER	'X'	D. DISPOSER
	1. RAIL		1. PILE		1. FILTRATION		1. LANDFILL
	2. SHIP		2. SURFACE IMPOUNDMENT		2. INCINERATION		2. LANDFARM
	3. BARGE		3. DRUMS		3. VOLUME REDUCTION		3. OPEN DUMP
	4. TRUCK		4. TANK, ABOVE GROUND		4. RECYCLING/RECOVERY		4. SURFACE IMPOUNDMENT
	5. PIPELINE		5. TANK, BELOW GROUND		5. CHEM./PHYS. TREATMENT		5. MIDNIGHT DUMPING
	6. OTHER (specify):		6. OTHER (specify):		6. BIOLOGICAL TREATMENT		6. INCINERATION
					7. WASTE OIL REPROCESSING		7. UNDERGROUND INJECTION
					8. SOLVENT RECOVERY		8. OTHER (specify):
					9. OTHER (specify):		

E. SPECIFY DETAILS OF SITE ACTIVITIES AS NEEDED

V. WASTE RELATED INFORMATION

A. WASTE TYPE

☐ 1 UNKNOWN ☐ 2. LIQUID ☐ 3. SOLID ☐ 4. SLUDGE ☐ 5. GAS

B. WASTE CHARACTERISTICS

☐ 1 UNKNOWN ☐ 2. CORROSIVE ☐ 3. IGNITABLE ☐ 4 RADIOACTIVE ☐ 5 HIGHLY VOLATILE
☐ 6. TOXIC ☐ 7 REACTIVE ☐ 8. INERT ☐ 9 FLAMMABLE

☐ 10. OTHER (specify):

C. WASTE CATEGORIES

1. Are records of wastes available? Specify items such as manifests, inventories, etc. below.

2. Estimate the amount (specify unit of measure) of waste by category; mark 'X' to indicate which wastes are present.

a. SLUDGE	b. OIL	c. SOLVENTS	d. CHEMICALS	e. SOLIDS	f. OTHER
AMOUNT	AMOUNT	AMOUNT	AMOUNT	AMOUNT	AMOUNT
UNIT OF MEASURE	UNIT OF MEASURE	UNIT OF MEASURE	UNIT OF MEASURE	UNIT OF MEASURE	UNIT OF MEASURE
'X' (1) PAINT, PIGMENTS	'X' (1) OILY WASTES	'X' (1) HALOGENATED SOLVENTS	'X' (1) ACIDS	'X' (1) FLYASH	'X' (1) LABORATORY PHARMACEUT.
(2) METALS SLUDGES	(2) OTHER (specify):	(2) NON-HALOGNTD SOLVENTS	(2) PICKLING LIQUORS	(2) ASBESTOS	(2) HOSPITAL
(3) POTW		(3) OTHER (specify):	(3) CAUSTICS	(3) MILLING/ MINE TAILINGS	(3) RADIOACTIVE
(4) ALUMINUM SLUDGE			(4) PESTICIDES	(4) FERROUS SMLTG. WASTES	(4) MUNICIPAL
(5) OTHER (specify):			(5) DYES/INKS	(5) NON-FERROUS SMLTG. WASTES	(5) OTHER (specify):
			(6) CYANIDE	(6) OTHER (specify):	
			(7) PHENOLS		
			(8) HALOGENS		
			(9) PCB		
			(10) METALS		

3. LIST SUBSTANCES OF GREATEST CONCERN WHICH MAY BE ON THE SITE (*place in descending order of hazard*).

4. ADDITIONAL COMMENTS OR NARRATIVE DESCRIPTION OF SITUATION KNOWN OR REPORTED TO EXIST AT THE SITE.

VI. HAZARD DESCRIPTION

A. TYPE OF HAZARD	B. POTENTIAL HAZARD (*mark 'X'*)	C. ALLEGED INCIDENT (*mark 'X'*)	D. DATE OF INCIDENT (*mo., day, yr.*)	E. REMARKS
1. NO HAZARD				
2. HUMAN HEALTH				
3. NON-WORKER INJURY/EXPOSURE				
4. WORKER INJURY				
5. CONTAMINATION OF WATER SUPPLY				
6. CONTAMINATION OF FOOD CHAIN				
7. CONTAMINATION OF GROUND WATER				
8. CONTAMINATION OF SURFACE WATER				
9. DAMAGE TO FLORA/FAUNA				
10. FISH KILL				
11. CONTAMINATION OF AIR				
12. NOTICEABLE ODORS				
13. CONTAMINATION OF SOIL				
14. PROPERTY DAMAGE				
15. FIRE OR EXPLOSION				
16. SPILLS/LEAKING CONTAINERS/ RUNOFF/STANDING LIQUIDS				
17. SEWER, STORM DRAIN PROBLEMS				
18. EROSION PROBLEMS				
19. INADEQUATE SECURITY				
20. INCOMPATIBLE WASTES				
21. MIDNIGHT DUMPING				
22. OTHER (*specify*):				

Continue On Reverse

Continued From Front

VII. PERMIT INFORMATION

A. INDICATE ALL APPLICABLE PERMITS HELD BY THE SITE.

☐ 1. NPDES PERMIT ☐ 2. SPCC PLAN ☐ 3. STATE PERMIT *(specify)*: _____

☐ 4. AIR PERMITS ☐ 5. LOCAL PERMIT ☐ 6. RCRA TRANSPORTER

☐ 7. RCRA STORER ☐ 8. RCRA TREATER ☐ 9. RCRA DISPOSER

☐ 10. OTHER *(specify)*: _____

B. IN COMPLIANCE?

☐ 1. YES ☐ 2. NO ☐ 3. UNKNOWN

4. WITH RESPECT TO *(list regulation name & number)*: _____

VIII. PAST REGULATORY ACTIONS

☐ A. NONE ☐ B. YES *(summarize below)*

IX. INSPECTION ACTIVITY *(past or on-going)*

☐ A. NONE ☐ B. YES *(complete items 1,2,3, & 4 below)*

1. TYPE OF ACTIVITY	2. DATE OF PAST ACTION *(mo., day, & yr.)*	3. PERFORMED BY: *(EPA/State)*	4. DESCRIPTION

X. REMEDIAL ACTIVITY *(past or on-going)*

☐ A. NONE ☐ B. YES *(complete items 1, 2, 3, & 4 below)*

1. TYPE OF ACTIVITY	2. DATE OF PAST ACTION *(mo., day, & yr.)*	3. PERFORMED BY: *(EPA/State)*	4. DESCRIPTION

NOTE: Based on the information in Sections III through X, fill out the Preliminary Assessment *(Section II)* information on the first page of this form.

ALD 000 652 693

ENVIRONMENTAL PROTECTION AGENCY
NOTIS DATA MANAGEMENT SYSTEM

NOTIS REPORT #4 — LISTING BY FACILITY — REPORT DATE: 10/19/81
REGION: 04 STATE: AL

NOTIFICATION ID NO.	SITE NAME / SITE STREET / SITE CITY / SITE COUNTY / EPA SITE ID NO.	NOTIFIER NAME / NOTIFIER STREET / NOTIFIER CITY / STATE / ZIP / (CONTACT NAME/TITLE) / (CONTACT PHONE)	NOTIFIER STATUS (PRES OWN, PAST OWN PRES OP, PAST OP TRANSPORTER, VOLUNTEER)
ALS000001097	REYNOLDS METALS CO/RIVER RD PLANT RIVER RD FLORENCE 35631 COLBERT ALT020010195	LAWRENCE C. TROPEA, JR 6601 WEST BROAD ST RICHMOND VA 23261 (BENT, CHARLES, STAFF ENV ENGR) (804-281-2918)	PRES OWN

RELEASES TO THE ENVIRONMENT: NONE

DATES OF WASTE HANDLING: 1980 TO 1980

WASTE AMOUNT: 0 AREA: 0 MAP PRESENT: NO FORM TYPE: 8900-1

NOTIF. POSTMARKED DATE: 81/06/09 SIGNATURE PRESENT: YES DATE OF LAST UPDATE: 81/10/14

TYPE OF FACILITY	TYPES OF WASTES	SOURCES OF WASTE
OTHER-(SEE COMMENTS)	UNKNOWN	OTHER-(SEE COMMENTS)
OTHER-(SEE COMMENTS)		
OTHER-(SEE COMMENTS)		
OTHER-(SEE COMMENTS)		

COMMENTS	SEQ NO.
MANUFACTURE OF FERROMANGANESE	400
UNKNOWN	600

EPA Notification of Hazardous Waste Site

United States Environmental Protection Agency
Washington DC 20460

This initial notification information is required by Section 103(c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 and must be mailed by June 9, 1981.

Please type or print in ink. If you need additional space, use separate sheets of paper. Indicate the letter of the item which applies.

810609

ALS 000001097

A Person Required to Notify:

Enter the name and address of the person or organization required to notify.

Name: Reynolds Metals Company
Street: 6601 West Broad Street
City: Richmond State: VA Zip Code: 23261

B Site Location:

Enter the common name (if known) and actual location of the site.

ALD 652 693 mailing address
~~ALT 020 010 195~~

Name of Site: River Road Plant
Street: P. O. Box 1609 River Road
City: Florence County: Colbert State: AL Zip Code: 35631

C Person to Contact:

Enter the name, title (if applicable), and business telephone number of the person to contact regarding information submitted on this form.

Name (Last, First and Title): Bent, Charles, Staff Env. Engineer
Phone: 804/281-2918

SITE LOCATION: RIVER ROAD MUSCLE SHOALS AL 35660

D Dates of Waste Handling:

Enter the years that you estimate waste treatment, storage, or disposal began and ended at the site.

From (Year): 1980 To (Year): 1980

E Waste Type: Choose the option you prefer to complete

Option 1: Select general waste types and source categories. If you do not know the general waste types or sources, you are encouraged to describe the site in Item I—Description of Site.

General Type of Waste:
Place an X in the appropriate boxes. The categories listed overlap. Check each applicable category.

1. ☐ Organics
2. ☐ Inorganics
3. ☐ Solvents
4. ☐ Pesticides
5. ☐ Heavy metals
6. ☐ Acids
7. ☐ Bases
8. ☐ PCBs
9. ☐ Mixed Municipal Waste
10. ☒ Unknown
11. ☐ Other (Specify)

Source of Waste:
Place an X in the appropriate boxes.

1. ☐ Mining
2. ☐ Construction
3. ☐ Textiles
4. ☐ Fertilizer
5. ☐ Paper/Printing
6. ☐ Leather Tanning
7. ☐ Iron/Steel Foundry
8. ☐ Chemical, General
9. ☐ Plating/Polishing
10. ☐ Military/Ammunition
11. ☐ Electrical Conductors
12. ☐ Transformers
13. ☐ Utility Companies
14. ☐ Sanitary/Refuse
15. ☐ Photofinish
16. ☐ Lab/Hospital
17. ☐ Unknown
18. ☒ Other (Specify) manufacture of ferromanganese

Option 2: This option is available to persons familiar with the Resource Conservation and Recovery Act (RCRA) Section 3001 regulations (40 CFR Part 261).

Specific Type of Waste:
EPA has assigned a four-digit number to each hazardous waste listed in the regulations under Section 3001 of RCRA. Enter the appropriate four-digit number in the boxes provided. A copy of the list of hazardous wastes and codes can be obtained by contacting the EPA Region serving the State in which the site is located.

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RECEIVED EPA/REGION IV JUN 9 4 25 PM '81 ENFORCEMENT DIVISION

Form Approved
OMB No. 2000-0138

EPA Form 8900-1

F Waste Quantity:

Place an X in the appropriate boxes to indicate the facility types found at the site.

In the "total facility waste amount" space give the estimated combined quantity (volume) of hazardous wastes at the site using cubic feet or gallons.

In the "total facility area" space, give the estimated area size which the facilities occupy using square feet or acres.

Facility Type

1. ☐ Piles
2. ☐ Land Treatment
3. ☐ Landfill
4. ☐ Tanks
5. ☐ Impoundment
6. ☐ Underground Injection
7. ☐ Drums, Above Ground
8. ☐ Drums, Below Ground
9. ☒ Other (Specify) Unknown

Total Facility Waste Amount

cubic feet Unknown

gallons

Total Facility Area

square feet Unknown

acres

G Known, Suspected or Likely Releases to the Environment:

Place an X in the appropriate boxes to indicate any known, suspected, or likely releases of wastes to the environment.

☐ Known ☐ Suspected ☐ Likely ☒ None

Note: Items H and I are optional. Completing these items will assist EPA and State and local governments in locating and assessing hazardous waste sites. Although completing the items is not required, you are encouraged to do so.

H Sketch Map of Site Location: (Optional)

Sketch a map showing streets, highways, routes or other prominent landmarks near the site. Place an X on the map to indicate the site location. Draw an arrow showing the direction north. You may substitute a publishing map showing the site location.

I Description of Site: (Optional)

Describe the history and present conditions of the site. Give directions to the site and describe any nearby wells, springs, lakes, or housing. Include such information as how waste was disposed and where the waste came from. Provide any other information or comments which may help describe the site conditions.

J Signature and Title:

The person or authorized representative (such as plant managers, superintendents, trustees or attorneys) of persons required to notify must sign the form and provide a mailing address (if different than address in item A). For other persons providing notification, the signature is optional. Check the boxes which best describe the relationship to the site of the person required to notify. If you are not required to notify check "Other".

Name Lawrence C. Tropea, Jr.

Street 6601 West Broad Street

City Richmond State VA Zip Code 23261

Signature [signature] Date 81-06-09

☒ Owner, Present
☐ Owner, Past
☐ Transporter
☐ Operator, Present
☐ Operator, Past
☐ Other

Summary of Pollution Abatement Plan
Submitted by
UNION CARBIDE CORPORATION
MINING AND METALS DIVISION
Sheffield, Alabama

Union Carbide's Sheffield plant is located on the Tennessee River a short distance upstream of Wilson Dam. The plant manufactures ferrosilicon alloys in electric furnaces which are charged with silica gravel, scrap steel, wood chips, coal and coke. Flue gases from each of the six furnaces are washed in individual gas scrubbers which remove non-combustible materials from the gas before it is discharged to the atmosphere. The solids removed consist primarily of carbon, silica and calcium oxide. Cyanide is also present in the gases and is removed in the wet scrubbing of the gases emitted from the furnaces. Cooling water for indirect cooling of the furnaces is pumped from Lake Wilson, used without treatment and released uncontaminated except for an approximately 15 degree rise in temperature.

Treatment and Control Facilities

Although Union Carbide's Sheffield plant is a "grandfather" industry, Commission personnel have been working with company officials for several years in developing and installing a satisfactory pollution abatement program. As a matter of fact, the company has not been officially notified under provisions of the new Water Pollution Control Law in view of the fact that final improvements to the waste treatment system were under construction. These facilities have now been completed and the company has made a formal request for consideration of their system by the Commission and issuance of a permanent permit if the system is deemed satisfactory. Due to the location of the plant which is on highly developed recreational waters and the proximity of a water supply intake a short distance downstream, a high degree of treatment and adequate safeguards to insure against unauthorized losses is needed.

The treatment system now in operation is briefly described in the following paragraphs.

Water from the six furnace gas washers consisting of an average flow of 1,600 gpm and a maximum of 2,750 gpm flows to the wet well at a pumping station. In the wet well lime and chlorine is added for the first step in the destruction of cyanides present in the waste. In this step the cyanide compounds are converted to cyanate compounds. From the lift station the wastes are pumped to a clarifloculator (settling tank) where the solids are settled. A coagulant aid is added as the wastes reach this unit. Deposited solids are pumped from the bottom of the tank several times daily to sludge lagoons on the plant property. The overflow from the settling tank is chlorinated again to complete the destruction of cyanates to nitrogen and carbon dioxide. The wastes next enter an earthern retention basin approximately 1.3 acres in area and with an average depth of 12 feet. From this basin, the wastes flow to a second earthern basin approximately 1.9 acres in area with an average depth of 8 feet. These two basins provide final polishing of the wastes in regard to the removal of solids carried over from the clarifloculator and provide additional contact time to complete the destruction of cyanides and cyanates. From the second basin the wastes flow to a smaller basin some 0.25 acres in area and 8 feet deep where the process wastes mix with the treated wastes from the plant's sanitary sewage treatment plant and with approximately ~~14,000~~ 4,000 gallons per minute of cooling water.

As a precaution in the event of pump or power failure at the main pumping station which lifts the wastes to the treatment system, an emergency basin approximately 4.6 acres in size has been provided which will permit a measure of treatment during such emergency periods. An alarm system is connected to the level controls in the wet well of the pumping station and wired to the plant's main control room so that any high level condition is detected at once. As an added precaution against failure of the system parallel pressure lines have been provided for the

first 150 feet from the pumping station. Experience has shown that calcium deposits from the lime added in the wet well build up in the first 100 feet from time to time and restrict flow in the pipe. By providing parallel lines, one section can be taken out of service for cleaning without interruption of pumping. A spare pump is also maintained.

Samples of the combined waste water stream discharged to Wilson Lake are collected daily and the results of analyses performed on them are submitted to the Commission at monthly intervals.

It should be pointed out that the plant wastes are discharged into an inlet just off Wilson Lake and prior to the installation of the treatment facilities described above received only partially treated wastes which contained large quantities of unsightly solids consisting of carbon and other materials. It is to be expected that solids deposited in the inlet over a period of years may still appear on the lake at intervals for sometime even though the wastes are now being given satisfactory treatment.

A unique feature of the company's waste control system would seem to be of interest to the Commission. Catfish and bream have been placed in the last pond of the treatment system to serve as a final indicator of the quality of water discharged.

Staff Recommendations

The staff recommends that the waste treatment facilities constructed by Union Carbide Company's Sheffield plant be approved and a permanent permit issued with the condition that the combined waste water not contain more than the following contaminants:

Cyanide	0.025 ppm
Suspended Solids	25 ppm
pH	9.5
Temperature	15 degree rise
Flow	14,000 gpm (average daily)

The company should be advised that the requirement pertaining to suspended solids would be interpreted as not more than a 25 ppm increase over that water taken from the lake. (The water is not treated for process purposes.) Similarly, the temperature requirement would mean that the water discharged would not be raised greater than 15 degrees except that the Commission's water quality criteria for this parameter would not be violated in any case.