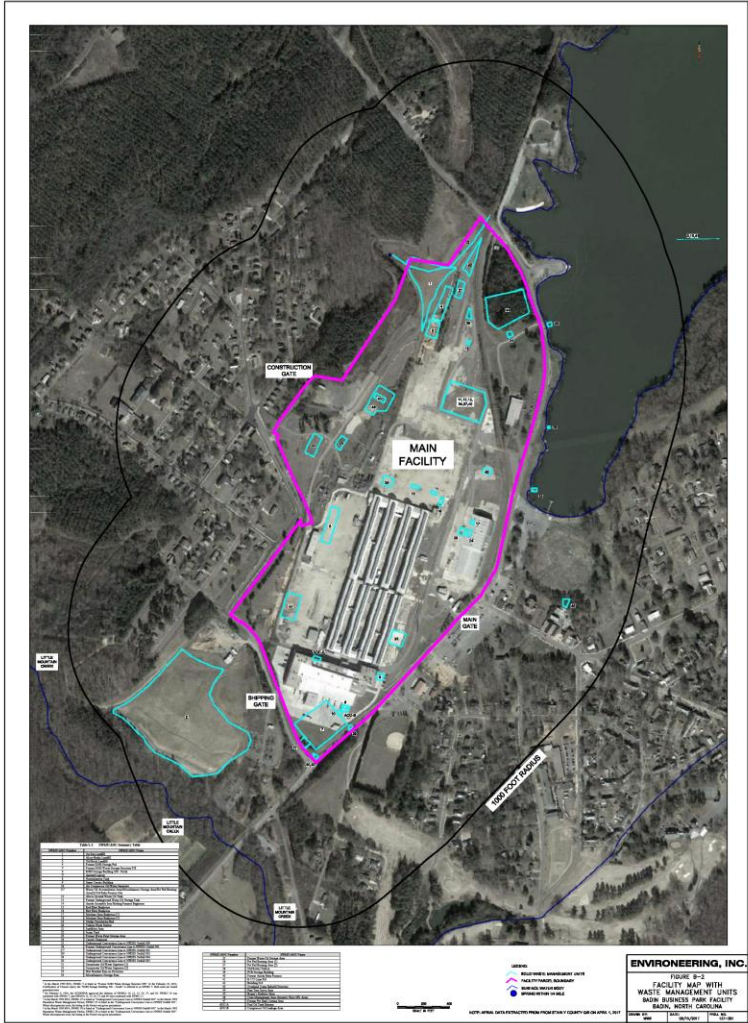




# BADIN BUSINESS PARK





# Solid Waste Management Units

List of Solid Waste Management Units and Areas of Concern

SWMU Number	Description		Document	Date Determined
1	On – Site Landfill	NFA–GW	RFI Report	3/2001
2	Alcoa – Badin Landfill	CMS	RFI Report	3/2001
3	Old Brick Landfill	CMS	RFI Report	3/2001
4	Former K088 Storage Pad	NFA–GW	RFI Report	3/2001
5	Former K088 Waste Storage Structure 058	Clean Closed	Closure Certification	11/18/1992 3/30/1993
6	K088 Storage Buildings 206 North and 206 South	Clean Closed	Closure Certification Accepted	7/9/2012
7	Aerated Lagoon	NFA	Sampling Report	11/21/2007
8	Neutralization Tank	NFA	RFA	3/1/1990
9	Spent Caustic Building	NFA	RFA	3/1/1990
10	Air Compressor Oil/Water Separator	NFA	Modification Approval Letter	4/22/1993
11	Waste Oil Accumulation Area/Miscellaneous Storage Area/Pot Pad Burning Area/Old Bake Furnace Site	NFA–GW	RFI Report	3/2001
12	Above – Ground Waste Oil Tank	NFA	Modification Approval Letter	4/22/1993
13	Former Underground Waste Oil Storage Tank	NFA	Modification Approval Letter	4/22/1993
14	Anode Assembly Iron Melting Furnace Baghouse	NFA	RFA	3/1/1990
15	Rod Blast Baghouse	NFA	RFA	3/1/1990
16	Butt Blast Baghouse	NFA	RFA	3/1/1990
17	Machine Shop Baghouse [1]	NFA	RFA	3/1/1990
18	Machine Shop Baghouse [2]	NFA	RFA	3/1/1990
19	Sludge Dewatering Bed	NFA	RFA	3/1/1990
20	Vehicle Wash Station	NFA	CS Report	6/28/1993
21	Sandblast Area	NFA	RFA	3/1/1990
22	Scrap Yard	NFA–GW	RFI Report	3/2001
23	Former Waste Paint Storage Area	NFA	RFA	3/1/1990
24	Caustic Degreaser	NFA	RFA	3/1/1990
25	Underground Conveyance Line to NPDES Outfall 009	NFA–GW	RFI Report	3/2001
26	Former Underground Conveyance Line to NPDES Outfall 001	NFA	RFA	3/1/1990
27	Underground Conveyance Line to NPDES Outfall 003	NFA	RFA	3/1/1990
28	Underground Conveyance Line to NPDES Outfall 002	NFA	RFA	3/1/1990

# Solid Waste Management Units (cont'd)

SWMU Number	Description		Document	Date Determined
29	Underground Conveyance Line to NPDES Outfall 004	NFA	RFA	3/1/1990
30	Underground Conveyance Line to NPDES Outfall 005	NFA	RFA	3/1/1990
31	Stormwater Oil/Water Separator [1]	NFA	RFA	3/1/1990
32	Stormwater Oil/Water Separator [2]	NFA	RFA	3/1/1990
33	Wet Weather Run-on Diversion	NFA-GW	RFI Report	3/2001
34	Miscellaneous Storage Area	NFA	Modification Approval Letter	4/22/1993
35	"Old" Waste Oil Storage Area	NFA-GW	RFI Report	3/2001
36	Pot Pad Burning Area (1)	NFA	CS Report	6/28/1993
37	Pot Pad Burning Area (2)	NFA	Modification Approval Letter	4/22/1993
38	Old Rotary Station	NFA	RFI Report	3/2001
39	PCB Storage Building	NFA	CS Report	6/28/1993
40	A Former Anode Bake Furnace	NFA	Modification Approval Letter	4/22/1993
41	R – 173 Lime Fill/Alcoa-Pine Road Ravine Disposal site	NFA	Remain Under IHSB Authority	2/16/2018
42	Building 016	NFA	RFI Report	3/2001
43	Overhead Crane Rebuild Structure	NFA	RFI Report	3/2001
44	Pine Tree Grove Area	CMS	RFI Report	3/2001
45	Bogan's Radiator Shop	NFA	IM Report	8/2004
46	Coke Management Area (formerly West SPL Area)	NFA-GW	RFI Report	3/2001
47	Former Potshell Cutting Area	NFA	Soils Excavated	1996
AOC-A	Fuel Oil Tank Release	NFA	RFI Report	3/2001
AOC-B	Compressor Oil Leakage Area	NFA	RFI Report	3/2001

CS Report: Confirmatory Sampling Report, June 28, 1993.

IM Report: Interim Measures Report Bogan's Radiator Shop Site (SWMU #45), August 2004.

Modification Approval Letter: April 22, 1993 letter from Jerome Rhodes (HWS) to Conrad Carter (ALCOA) approving the modification request of January 18, 1993 with the amendment dated April 13, 1993.

Remain Under IHSB Authority: February 16, 2018 letter from Robert McDaniel (HWS) to Robyn Gross notifying Badin Business Park that the Alcoa-Pine Road Ravine Disposal site should remain under the authority of Inactive Hazardous Waste Sites Branch.

RFA: RCRA Facility Assessment Report, March 1, 1990.

RFI Report: RCRA Facility Investigation Report, March 2001.

Sampling Report: Former Aeration Lagoon Sampling Report: November 21, 2007.

# Solid Waste Management Units

Solid Waste Management Units Requiring a CMS	
SWMU Number	Description
2	Alcoa – Badin Landfill
3	Old Brick Landfill
44	Pine Tree Grove Area

Solid Waste Management Units Requiring Groundwater Remediation	
SWMU Number	Description
1	On – Site Landfill
2	Alcoa/Badin Landfill
3	Old Brick Landfill
4	Former K088 Storage Pad
11	Waste Oil Accumulation Area/Miscellaneous Storage Area/Pot Pad Burning Area/Old Bake Furnace Site
22	Scrap Yard
25	Underground Conveyance Line to NPDES Outfall 009
33	Wet Weather Run-on Diversion
35	“Old” Waste Oil Storage Area
44	Pine Tree Grove Area
46	Coke Management Area (formerly West SPL Area)

List of Solid Waste Management Units and Areas of Concern That Require No Further Action at This Time			
SWMU/AOC Number	Description	Document	Date NFA Determined
7	Aerated Lagoon	Sampling Report	11/21/2007
8	Neutralization Tank	RFA	3/1/1990
9	Spent Caustic Building	RFA	3/1/1990
10	Air Compressor Oil/Water Separator	Modification Approval Letter	4/22/1993
12	Above – Ground Waste Oil Tank	Modification Approval Letter	4/22/1993
13	Former Underground Waste Oil Storage Tank	Modification Approval Letter	4/22/1993
14	Anode Assembly Iron Melting Furnace Baghouse	RFA	3/1/1990
15	Rod Blast Baghouse	RFA	3/1/1990
16	Butt Blast Baghouse	RFA	3/1/1990
17	Machine Shop Baghouse [1]	RFA	3/1/1990
18	Machine Shop Baghouse [2]	RFA	3/1/1990
19	Sludge Dewatering Bed	RFA	3/1/1990
20	Vehicle Wash Station	CS Report	6/28/1993
21	Sandblast Area	RFA	3/1/1990
23	Former Waste Paint Storage Area	RFA	3/1/1990
24	Caustic Degreaser	RFA	3/1/1990
26	Former Underground Conveyance Line to NPDES Outfall 001	RFA	3/1/1990
27	Underground Conveyance Line to NPDES Outfall 003	RFA	3/1/1990
28	Underground Conveyance Line to NPDES Outfall 002	RFA	3/1/1990
29	Underground Conveyance Line to NPDES Outfall 004	RFA	3/1/1990
30	Underground Conveyance Line to NPDES Outfall 005	RFA	3/1/1990
31	Stormwater Oil/Water Separator [1]	RFA	3/1/1990
32	Stormwater Oil/Water Separator [2]	RFA	3/1/1990
34	Miscellaneous Storage Area	Modification Approval Letter	4/22/1993
36	Pot Pad Burning Area (1)	CS Report	6/28/1993
37	Pot Pad Burning Area (2)	Modification Approval Letter	4/22/1993
38	Old Rotary Station	RFI Report	3/2001
39	PCB Storage Building	CS Report	6/28/1993
40	A Former Anode Bake Furnace	Modification Approval Letter	4/22/1993
41	R – 173 Lime Fill/Alcoa-Pine Road Ravine Disposal site	Remain Under IHSB Authority	2/16/2018
42	Building 016	RFI Report	3/2001
43	Overhead Crane Rebuild Structure	RFI Report	3/2001
45	Bogan’s Radiator Shop	IM Report	8/2004
47	Former Potshell Cutting Area	Soils Excavated	1996
AOC-A	Fuel Oil Tank Release	RFI Report	3/2001
AOC-B	Compressor Oil Leakage Area	RFI Report	3/2001

CS Report: Confirmatory Sampling Report, June 28, 1993.  
IM Report: Interim Measures Report Bogan’s Radiator Shop Site (SWMU #45), August 2004  
Modification Approval Letter: April 22, 1993 letter from Jerome Rhodes (HWS) to Conrad Carter (ALCOA) approving the modification request of January 18, 1993 with the amendment dated April 13, 1993.  
Remain Under IHSB Authority: February 16, 2018 letter from Robert McDaniel (HWS) to Robyn Gross notifying Badin Business Park that the Alcoa-Pine Road Ravine Disposal site should remain under the authority of Inactive Hazardous Waste Sites Branch.  
RFA: RCRA Facility Assessment Report, March 1, 1990.  
RFI Report: RCRA Facility Investigation Report, March 2001.  
Sampling Report: Former Aeration Lagoon Sampling Report: November 21, 2007.

# Interim Measures

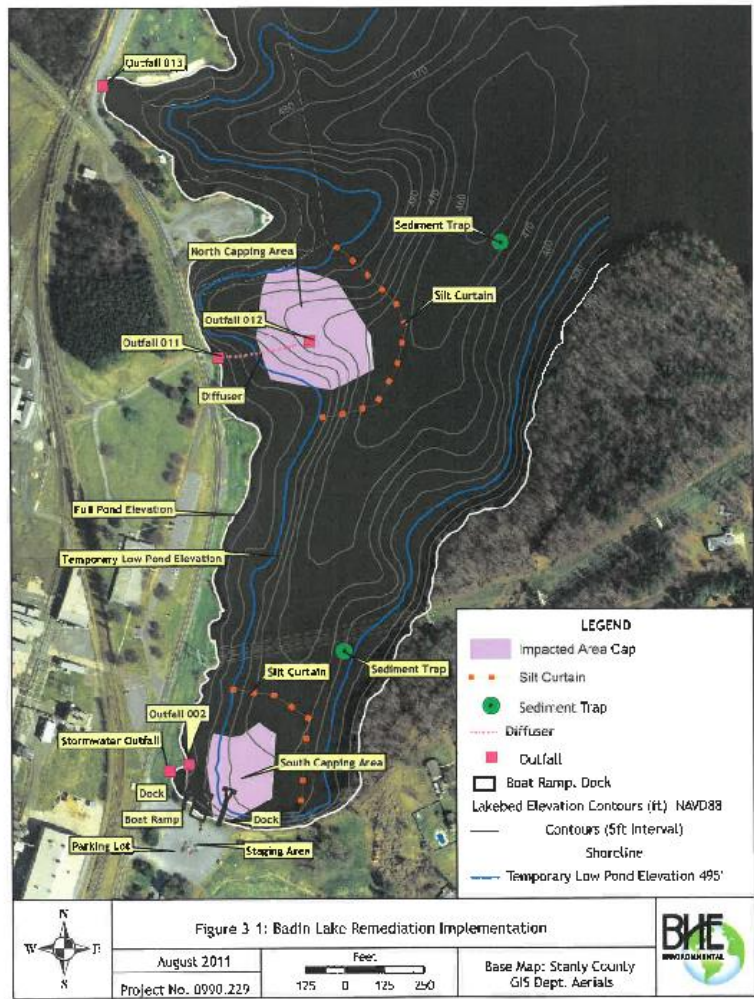
Interim Measures activities have been conducted at the following solid waste management units:

- SWMU 1: On-Site Landfill (1996);
- SWMU 2: Alcoa/Badin Landfill (1995 and 1997);
- SWMU 3: Old Brick Landfill (1996);
- SWMU 4: Former K088 Storage Pad (1996);
- SWMU 22: Scrap Yard (1994);
- SWMU 33: Wet Weather Run-on Diversion (1996);
- SWMU 35: “Old” Waste Oil Storage Area (2012); and
- SWMU 45: Bogan’s Radiator Shop (2004).

# Badin Lake Sediment Caps

An Administrative Agreement for State-Directed Remedial Action for the installation of sediment caps over two areas of sediments contaminated with polychlorinated biphenyls (PCBs) and polycyclic aromatic hydrocarbons (PAHs) within the southwestern arm of Badin Lake was implemented in September 2012. Installation of the caps was completed in early 2013.





# Corrective Measures Study

Investigative Work Plan for the Phase 4 and 5 Corrective Measures Study, Alcoa/Badin Landfill, and Former Ball Field was approved with conditions in January 2018.

SWMUs Requiring a CMS:

SWMU 2: Alcoa/Badin Landfill;

SWMU 3: Old Brick Landfill;

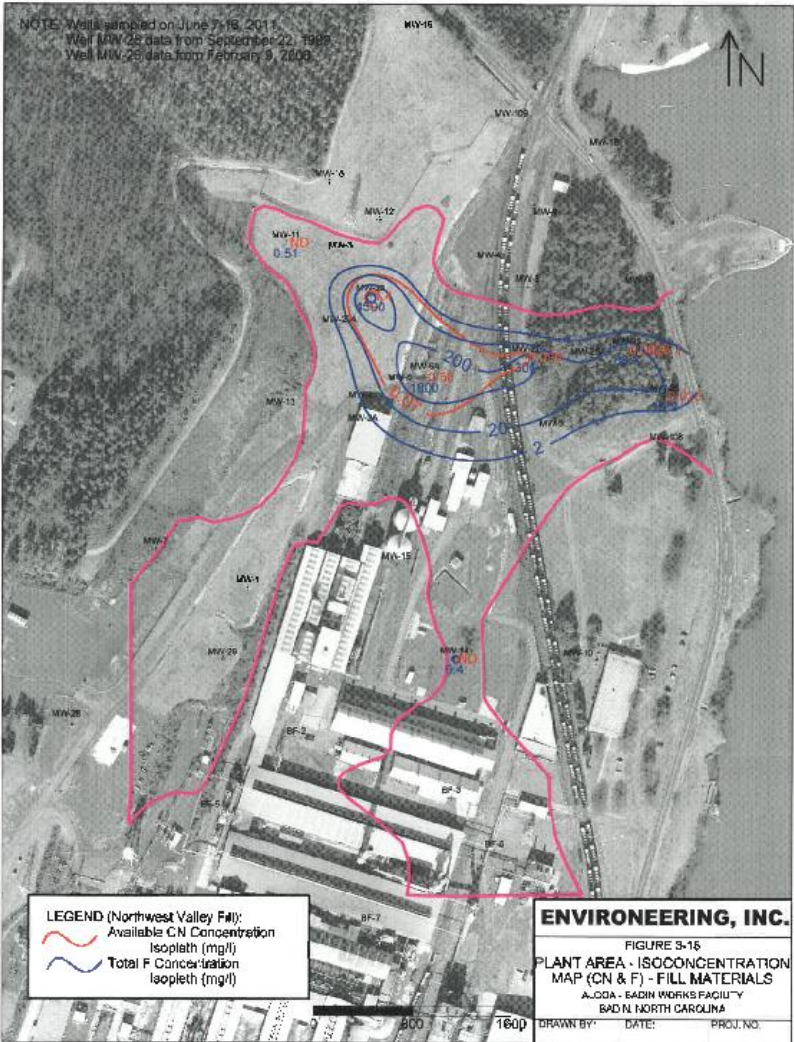
SWMU 44: Pine Tree Grove Area; and

Groundwater at SWMUs 1, 2, 3, 4, 11, 22, 25, 33, 35, 44, & 46.

Areas With Ongoing Investigation:

Alcoa/Badin Landfill (Investigation complete, results to be submitted by end of 2019); and

Former Ball Field – Investigation complete – Investigative Report for the Former Ball Field Area (August 9, 2018).





# Former Ball Field

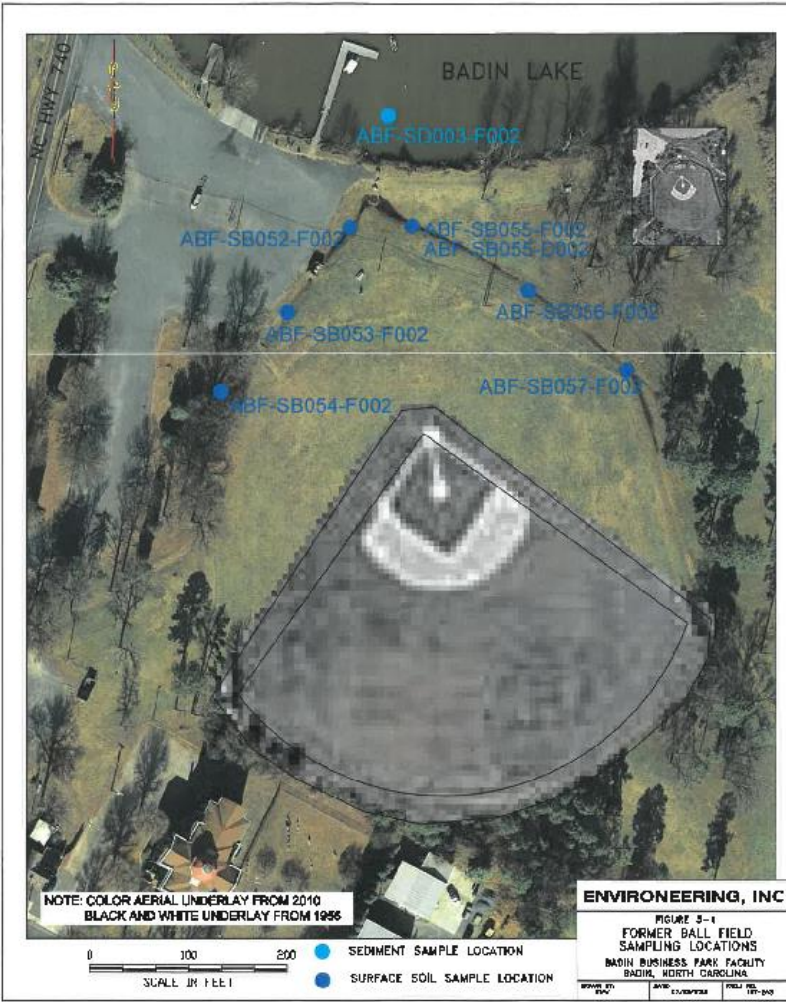
Former Ball Field work included:

Geophysical survey of the Former Ball Field;

Soil sampling of drainage swells; and

Sediment sampling near concrete culvert.

Geophysical investigation included electromagnetic and ground penetrating radar surveys of the Former Ball Field and boat launch gravel parking lot. Neither survey indicted the presence of a disposal trench.



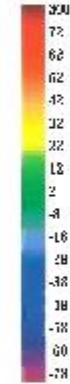


**Figure 5.**



**LEGEND**

Apparent Conductivity  
Data  
32180 Hz



**MULTIFREQUENCY EM  
GEOPHYSICAL SURVEY  
Alcoa Ball Field, Badin NC**



*Geo Solutions Ltd.*

# Alcoa/Badin Landfill

Objectives of the investigation of the Alcoa/Badin Landfill include:

Determine source and contribution of cyanide, fluoride, PCBs, and PAHs from the eastern drainage ditch to Little Mountain Creek;

Determine concentrations of constituents of concern in Little Mountain Creek;

Delineate extent of cyanide and fluoride in the wetland area;

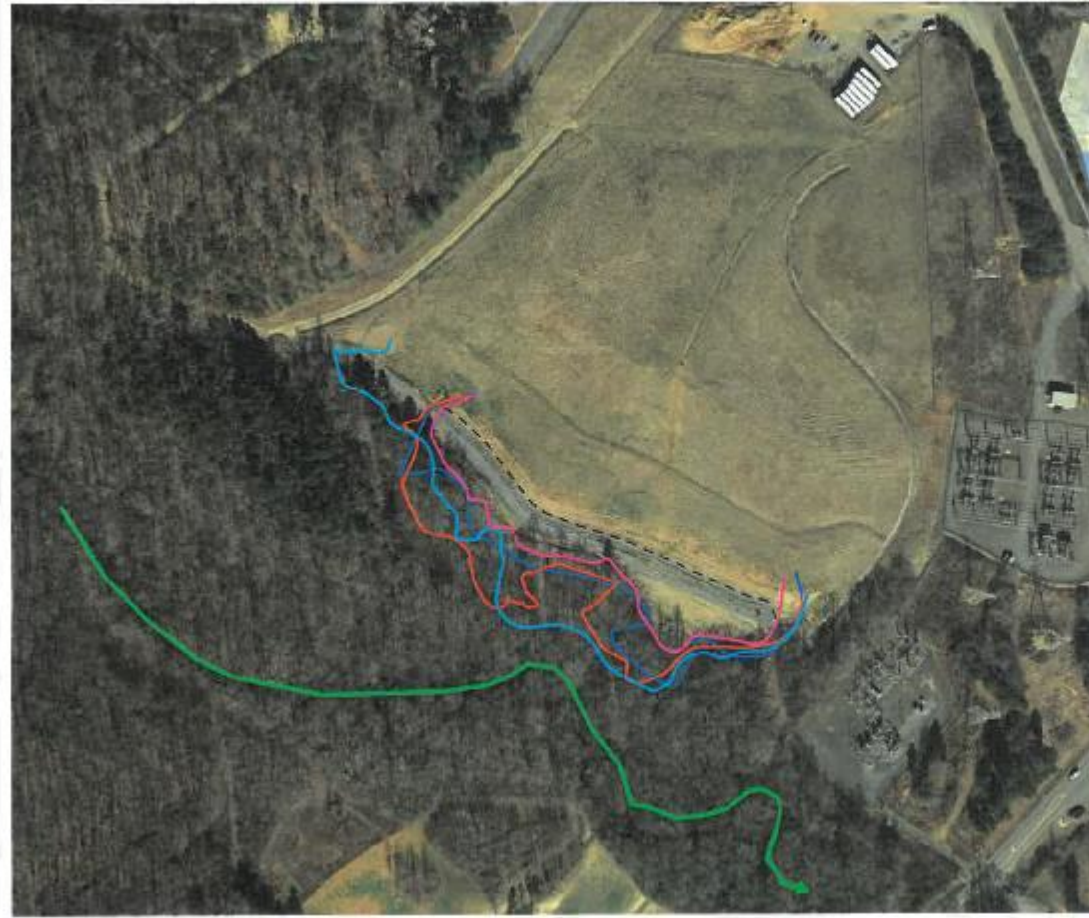
Evaluate groundwater discharge to the eastern drainage ditch; and

Evaluate the trench collection system on groundwater flow.

Results of the investigation of the Alcoa/Badin Landfill to be submitted by end of 2019.







**FIGURE 8**

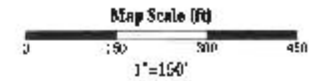


**LEGEND**

Delimitation of the  
50 mS/m Contour

- Quarter 1, April
- Quarter 2, July
- Quarter 3, October
- Quarter 4, January
- - - - - Collection Trench
- Approximate location  
of Little Mountain Creek

**MULTIFREQUENCY EM  
GEOPHYSICAL SURVEY  
Comparison of the Four Quarters  
Alcoa Badin Landfill, Badin NC**



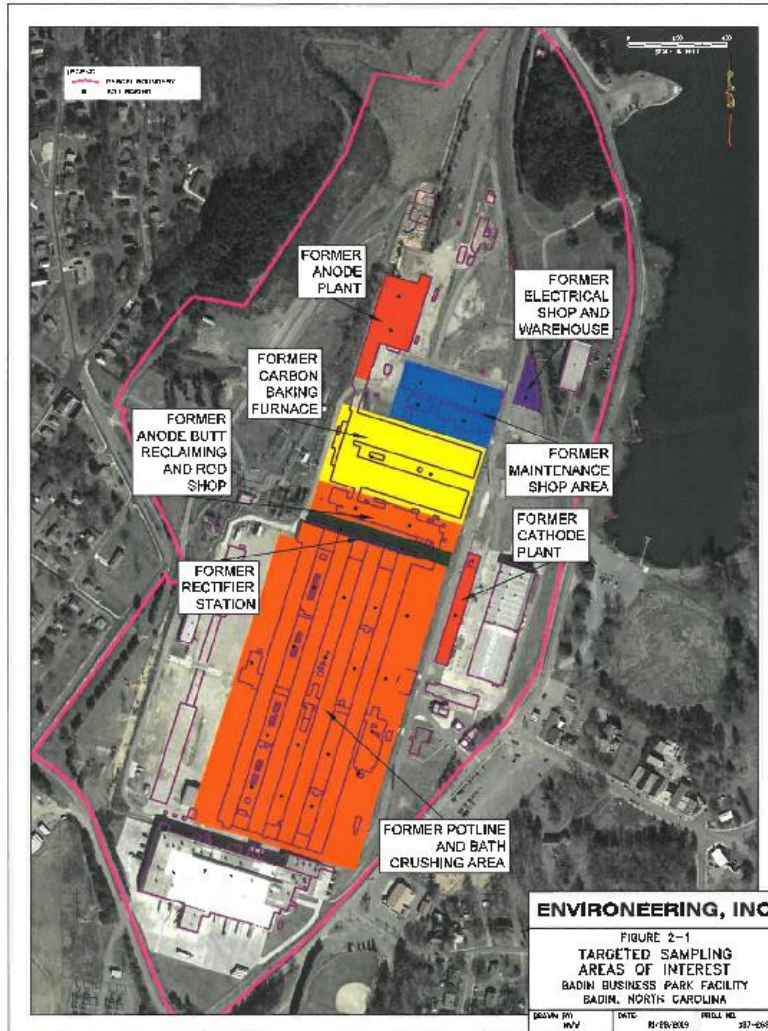
# Targeted Sampling Report

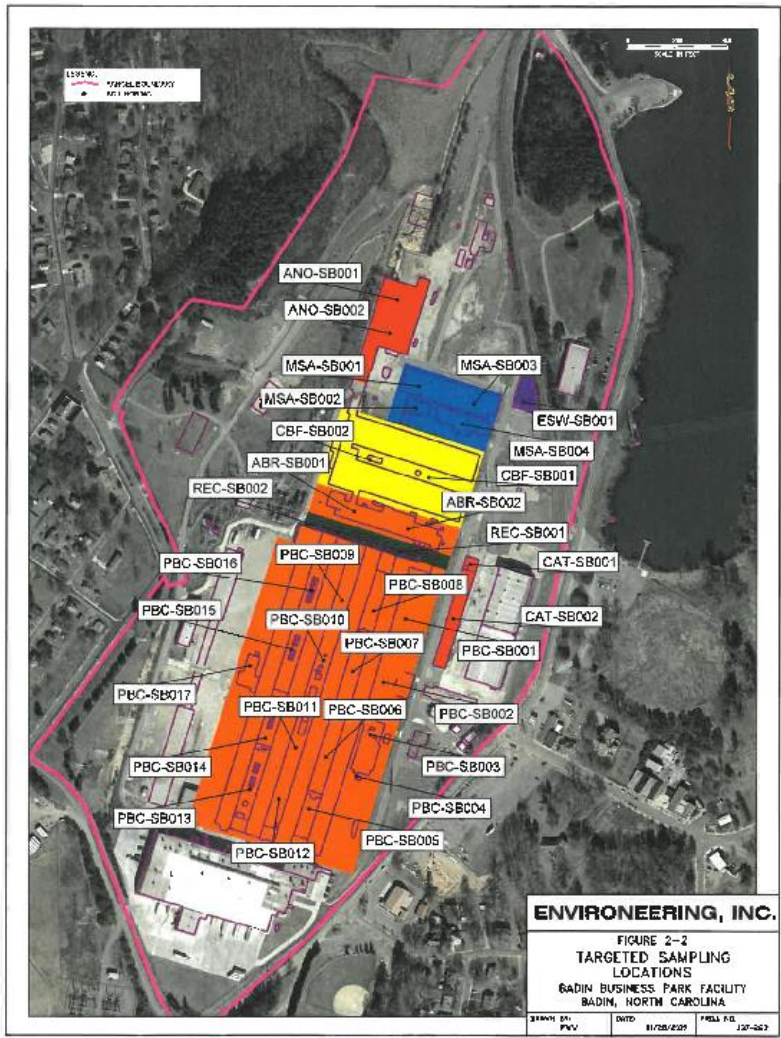
Locations on the main plant site which had not previously been sampled due to the obstruction of on-site buildings and structures. Soil samples were collected in areas for constituents of interest (volatile organic compounds, Polychlorinated Biphenyls aroclors, fluoride, cyanide, and Polycyclic Aromatic Hydrocarbons). The Targeted Sampling Work Plan was approved on June 15, 2018 and the report was submitted on January 29, 2019.

Sixty-five soil samples were collected from eight locations at the former plant site: shallow samples were collected from 0 to 1 foot below ground surface and deeper samples collected 4 to 5 feet below shallow sample.

## Areas Sampled:

- Former Electrical Shop and Warehouse;
- Former Maintenance Shop Area;
- Former Cathode Plant Area;
- Former Anode Plant Area;
- Former Potline and Bath Crushing Area;
- Former Anode Butt Reclamation and Rod Shop;
- Former Carbon Baking Furnace; and
- Former Rectifier Station.





# Targeted Sampling Report Conclusions

Fluoride, cyanide, and volatile organic compounds, were not detected above the Protection of Groundwater Preliminary Soil Remediation Goals (PSRGs) or Industrial PSRGs.

Aroclor 1232 was detected in a shallow sample above Protection of Groundwater PSRGs (Former Anode Plant Area). A confirmation sample was collected and Aroclor 1232 was not detected above lab detection limits.

PAHs were detected above the Protection of Groundwater PSRG in fifteen shallow soil samples and one deep soil sample.

Three shallow soil samples contained benzo(a)pyrene above the Industrial PSRG. These areas are covered by crushed concrete fill or gravel.

# Remediation Documents

Phase 3 – Engineering Data Collection for the Corrective Measures Study (October 31, 2012)

Investigative Work Plan for the Phase 4 and 5 Corrective Measures Study, Alcoa/Badin Landfill, and Former Ball Field (April 2, 2018)

Investigative Report for the Former Ball Field Area (August 9, 2018)

Groundwater Sampling Report (September 11, 2018)

Investigative Report for the Little Mountain Creek Area (December 5, 2018)

Targeted Sampling Report for the Badin Business Park Facility (January 28, 2019)

Little Mountain Creek Confirmatory Sampling Report (May 28, 2019)

Geophysical Evaluation for the Little Mountain Creek Area (May 30, 2019)

Targeted Soil Confirmatory Sampling Report (June 26, 2019)

These documents can be found on the North Carolina Hazardous Waste Section website at <https://deq.nc.gov/badinbusinessdocs>