Rupley Bahler Blake
Consulting Engineers

The Hanna Furnace Corporation
Solid Waste Management Facility
Engineering Report

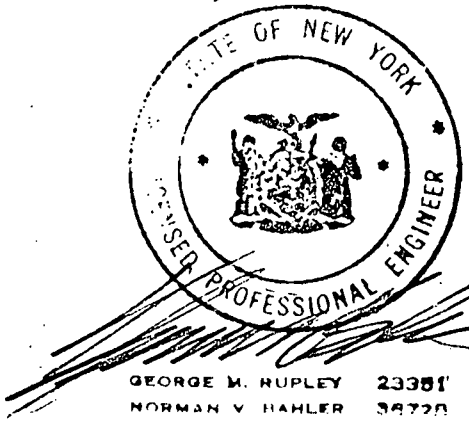
October 8, 1979

Prepared by:

Rupley Bahler Blake

391 Washington Street

Buffalo, New York 14203



Rupley Bahler Blake **Consulting Engineers**

391 Washington St.
Buffalo, N. Y. 14203
716/856 4955

Sibley Tower Bldg.
Rochester, N.Y. 14604
716/454 3520

October 8, 1979

The Hanna Furnace Corporation
Solid Waste Management Facility
Engineering Report

1. General

1.1 The Hanna Furnace Corporation is presently operating an existing private Solid Waste Management Facility at the site of their manufacturing Facilities on Fuhrmann Blvd. at the south city line of Buffalo, New York. The Solid Waste Management Facility is for the sole use of The Hanna Furnace Corporation and does not fall under any comprehensive plan for any municipality. The Facility consists of storage, salvage and landfill areas for the management of two distinct materials, "Flue Dust" and "Furnace and Construction Debris", as described below.

2. Process and Plan of Operation

2.1 "Flue Dust" and "Furnace Debris" are obtained as byproducts of the blast furnace operations. Iron ore, limestone, coke, and scrap iron are the raw materials charged into the blast furnace for reduction to pig iron. The waste products of the reduction process are slag, scrap iron, flue dust and furnace dirt. Slag and scrap iron are not handled at the site but are reclaimed at the furnace for future sale or use.

2.2 The flue dust collected is obtained from two processes in the cleaning of the flue gas. The first process consists of the collection of flue dust in dry form by separation in a primary gravity separator. Estimated yearly tonnage obtained in this process is 5,600 tons. The material obtained in this process is moved by railroad car from the separator to Flue Dust Storage Area A. The material is then loaded on truck for shipment following sale.

2.3 The second process in the cleaning of the flue gas consists of the use of a high energy orifice scrubber and gravity/expansion chamber to remove additional flue dust from the flue gas. The waste water from the scrubber is processed through gravity sedimentation tanks for thickening and then through a vacuum filter where the flue dust is removed as a filter cake. Estimated yearly tonnage obtained in this process is 6,800 tons. The material obtained from this process is moved by truck from the thickener/filter to Flue Dust Storage Area B.

2.4 The flue dust collected as outlined above is held in Flue Dust Storage Areas A & B for eventual sale. The flue dust sold is used in process operations by other industries. Flue dust management is a storage and transfer operation. The flue dust is not used for landfill.

2.5 The Furnace Debris collected is obtained from the cleaning, relining, and operation of the Furnace and auxiliary equipment. The Furnace debris consists of sand, brick, unrecovered scrap metal and slag. Estimated average yearly tonnage obtained in this process is 9,500 tons. The material obtained in this process is moved by railroad car or truck from the Furnace to Furnace Debris Storage Area C where it is temporarily held for trans-shipment by truck to Furnace and Construction Debris Storage Area D.

2.6 The Construction Debris collected is obtained as a result of construction projects on the manufacturing Facility site. The construction debris consists of waste construction material such as brick, block, cement, non-reused excavation material and scrap metal. Approximate average yearly tonnage obtained in this manner is 500 tons. The material obtained is moved by truck from the construction area to Furnace and Construction Debris Storage Area D.

2.7 The Furnace and Construction Debris Storage Area D is also the site of reclamation processes to salvage scrap metal contained in the debris. The material stored in this area is used in landfill operations on the east end of the pond located between the Flue Dust Storage Area B and Furnace and Construction Debris Storage Area D.

2.8 The Solid Waste Management Facility as described above consists of approximately 8.3 acres on a relatively flat industrial site, located adjacent to the Union Ship canal. The site is located 15 miles from the nearest airport. The expected life of the site for the landfilling operation is 30 years. The material storage operations are tied to the manufacturing operations with the material quantity reduced by sale. The expected life of the storage operation is equal to the life of the manufacturing facility.

2.9 The materials on the site are handled by commercial vehicular earth moving equipment, including front end loaders, cranes, and bulldozers and trucks. There is no waste processing equipment on the site.

2.10 The materials handled on the site as described above are of a non-hazardous, non-odorous, non-flammable and non-putrescible nature.

3. Testing Performed

3.1 In accordance with the agreement between The Hanna Furnace Corporation and the New York State D.E.C., water samples have been taken from the pond located between the Flue Dust Storage Area B and the Furnace and Construction Debris Storage Area D. Samples from the pond and the Union Ship Canal have been analyzed by McPhee, Smith, Rosenstein Engineers, P.C. as given in the attached report. The test results are also listed below.

3.2 In addition to the water sample tests, the flue dust filter cake has been tested by Andrew S. McCreath & Son, Inc., Analytical and Consulting Chemists, as given in the attached report. The test results are also given below. The percentages given below and in the report are percent of dry material after the moisture has been driven off.

3.3 The test results are as listed below:

FILTER CAKE TEST	
Material	Percent of dried total
Total iron, as Ferric Oxide	43.57
Phosphorous Pentoxide	0.076
Manganous Oxide	0.34
Silica	9.96
Alumina	1.81
Calcium Oxide	3.45
Magnesia	2.05
Carbon	30.10
Loss on ignition	34.17
PH (as received)	8.7
Moisture	8.17%

WATER SAMPLE TESTS		
Parameter	Test Results mg/l	
	Pond	Canal
Cyanides; Chlorine Amenable	<0.01	<0.01
Cyanides, total	<0.01	0.02
Ammonia	0.41	0.13
Phenolics	0.004	0.004
Iron, soluble	5.20	1.09

4. Contingency Planning

4.1 Equipment breakdowns will be handled by the rental of similar type equipment. Refer to item 2.9 above for type of equipment used.

4.2 Due to the nature of the material handled, water and air contamination are not a realistic problem.

4.3 Due to the non-flammable nature of the material, fire is not considered to be a hazard.

4.4 The materials handled at the Facility are non-hazardous and non-toxic.

5. Closure

5.1 Closure of the facility is not applicable to the Flue Dust Management portion of the facility, since this is a salable commodity.

5.2 Closure of the Furnace and Construction Debris landfill portion of the facility is not applicable so long as it is used as a temporary storage facility pending transfer to off-site landfill areas, which would be the case in the event of depletion of on-site landfill areas.

5.3 In the event of cessation of both storage/transfer and landfill operations, the landfill area shall be provided with a soil cover and a grass or ground cover crop. The soil cover and grading of the area shall be in accordance with the New York State requirements in effect at the time of closure.

6. Compliance with Section 360.8.a

6.1 Furnace and Construction Debris will be used to fill the existing pond. The existing pond is not naturally occurring but has resulted from surface water run-off into an area originally utilized as a storage area. Due to the nature of the materials handled and the initial intent of the pond area, item 360.8.a.1 is not considered to be applicable. (360.8.a.1.)

6.2 The solid waste management facility is not located on agricultural land. (360.8.a.2)

6.3 Leachate is not a problem, refer to section 3, "Analysis of Testing Performed". (360.8.a.3)

6.4 Salvaging operations are conducted solely by the owner in the area designated as Furnace and Construction Debris Storage Area D. (360.8.a.4)

6.5 The soild Waste Management Facility is located on the site of the owners manufacturing facility. There is no operable equipment at the facility other than vehicular earth moving type equipment which is key locked when no attendant is on duty. (360.8.a.5)

6.6 Access to the site is limited by its location on the owners manufacturing facility in a remote industrial area. The site will be posted. (360.8.a.6)

6.7 Paper and light litter subject to wind-borne dispersion are not handled at the site. (360.8.a.7)

6.8 The material handled at the facility is non-odorous. The material handled tends to form a cake-like crust so that windborne dust is effectively eliminated. Due to the non-putrescible and non-hazardous nature of the material handled, vector control is not applicable. (360.8.a.8)

6.9 On-site roads used to transport solid wastes will be maintained continuously passable and safe. (360.8.a.9)

6.10 Safety hazards to all persons on the facility will be minimized. (360.8.a.10)

6.11 Due to the location of the facility in an industrial area and the fact that the background noise is at a higher level than that emmitted from internal combustion powered vehicular equipment used at the facility, the sound level data as presented in item 360.8.a.11. iii is considered to be not applicable. (360.8.a.11)

6.12 Personnel shelters with complete utilities are available elsewhere within the manufacturing facility. (360.8.a.12)

6.13 Adequate equipment as outlined in section 2.9 are available to the facility during all hours of operation. (360.8.a.13)

6.14 Shelters for mobile equipment routine maintainance and repair are available elsewhere within the manufacturing facility. (360.8.a.14)

6.15 Materials handled at the site are non-combustible and open burning will not be permitted. (360.8.a.15)

6.16 Material will be confined to an area which can be effectively maintained, operated, and controlled. (360.8.a.16)

6.17 Materials handled at the site are non-hazardous. (360.8.a.17,18,&19)

6.18 The facility is maintained in accordance with the statements of the application and this report. Contingency plans will be developed as appropriate. (360.8.a.20)

6.19 The facility is not located on a flood-plain. (360.8.a.21)

7. Compliance with Section 360.8.b.3

7.1 The facility is used soley for the handling of non-hazardous industrial waste. The applicability of Section 360.8.b.1 - Sanitary Landfill is as covered below.

7.2 Ground water can be found at a depth of approximately (5) feet below grade with bedrock located approximately 25 feet below grade. Due to the nature of the material handled the vertical separation existing is deemed to be adequate. (360.8.b.1.i)

7.3 The Furnace and Construction Debris shall be used for filling the existing pond as outlined in section 2.7. (360.8.b.1.ii)

7.4 Due to the materials handled, ground water monitoring wells are not deemed to be required. (360.8.b. 1.iii)

7.5 Water monitoring programs are not deemed to be applicable. (360.8.b.1.iv)

7.6 Establishment of baseline water quality conditions is not applicable. (360.8.b.1.v)

7.7 Material handled at the facility is non-putrescible and decomposition gases are not produced. (360.8.b.1.vi)

7.8 Specific cover and compaction requirements are not applicable to the facility. Refer to comments under Section 4. - Closure. (360.8.b.vii to x)

7.9 Materials handled, when combined, will not produce a hazardous waste. (360.8.b.xi)

7.10 Landfill areas are more than 50 feet from the property boundary line. (360.8.b.xii)

7.11 A government benchmark exists on owners manufacturing facility, refer to attached plan. (360.8.b.xiii)

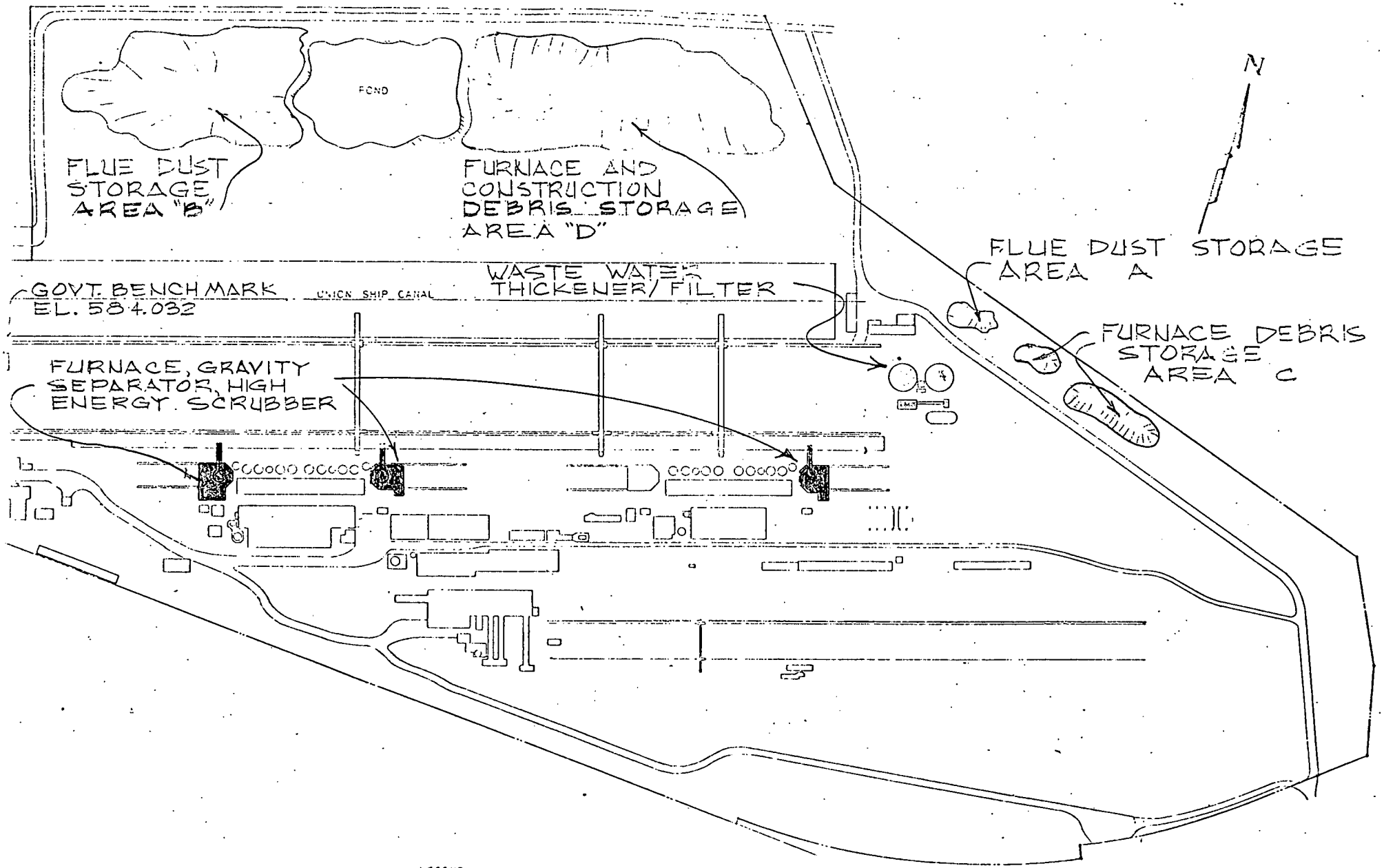
8. Additional Comments

8.1 The facility does not include incinerators.

8.2 The predominant type of soil on the site is OL (organic silty clays).

8.3 The Dock Superintendent shall be in responsible charge of the Solid Waste Management Facility and will attend the first available approved course of instruction in solid waste management procedures.

* * * *


POND
FLUE DUST STORAGE AREA "B"
FURNACE AND CONSTRUCTION DEBRIS STORAGE AREA "D"
N
FLUE DUST STORAGE AREA A
GOVT. BENCH MARK EL. 584.032
UNION SHIP CANAL
WASTE WATER THICKENER/FILTER
FURNACE DEBRIS STORAGE AREA C
FURNACE, GRAVITY SEPARATOR, HIGH ENERGY SCRUBBER
LEGEND
PROPERTY LINE
SCALE

Rupley Bahler Blake **Consulting Engineers**

391 Washington St.
Buffalo, N. Y. 14203
716/856 4955

Sibley Tower Bldg.
Rochester, N.Y. 14604
716/454 3520

The Hanna Furnace Corp.
Solid Waste Management Facility

Determination of Estimated Life for Landfilling Operation

1. Yearly Tonnage to Landfill:

Furnace Debris	9500 Ton/yr
Construction Debris	500 Ton/yr
	10000 Ton/yr

2. Estimated Density of Material Handled:

110 lb/cu.ft. x 0.0005 Ton/lb = 0.055 Ton/cu.ft.

3. Available volume:

a) The pond has an approx. average depth of 12 ft.

b) Fill to an average level of approx. 14 ft. above pond surface

c) Fill remainder of landfill area (to an average level of approx. 14 ft. above existing graded (approx. 9 ft. above existing average fill height of approx 5. ft above grade.)

d) Available Volume:

Pond (12.ft + 14.ft) x 300 ft. x 400 ft. = 3,120,000 cu.ft.

Remaining Area 9ft x 300 ft. x 850 ft. = 2,295,000 cu. ft.

Total 5,415,000 cu. ft.

4. Estimated Life:

5,415,000 cu. ft. ÷ (10,000 Ton/yr ÷ 0.055 Ton/cu.ft.) = 30 yrs.

Andrew S. McCreath & Son, Inc.
ANALYTICAL AND CONSULTING CHEMISTS

230-242 Liberty St., Harrisburg, Pa. 17101
TELEX: 84-2321
CABLE: McCREATH
TELEPHONE: (717) 238-9331

May 4, 1979

Hannah Furnace Corporation
P.O. Box 1207
Buffalo, New York 14240

Order No. 479099
Req. No. 51109

Gentlemen:

The sample of Dust Filter Cake received from you April 20, 1979, lost on being dried at 105°C:

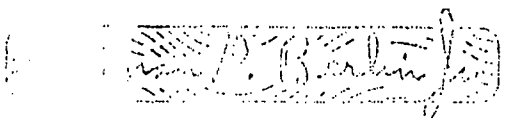
Moisture	8.17	per cent

and contained dried at 105°C:

Total Iron as Ferric Oxide	43.57	" "
Phosphorus Pentoxide	0.076	" "
Manganous Oxide	0.34	" "
Silica	9.96	" "
Alumina	1.81	" "
Calcium Oxide	3.45	" "
Magnesia	2.05	" "
Carbon	30.1	" "
Loss On Ignition	34.17	" "
pH (as received)	8.7	

Yours very truly,

ANDREW S. McCREATH & SON, INC.



URS
AN INTERNATIONAL PROFESSIONAL SERVICES ORGANIZATION
cPHEE, SMITH, ROSENSTEIN ENGINEERS, P.C. — IN AFFILIATION WITH — GENERAL TESTING CORPORATION
bsidiary of URS/MADIGAN-PRAEGER — ANALYTICAL
3-5525
625 DELAWARE AVENUE
BUFFALO, NEW YORK 14202
883

REPORT OF ANALYTICAL TESTING

Date of Report: 8/23/79

Code Number: B1213-1098

Requested By: Mr. H. C. Kozak
Hanna Furnace Corp.
P. O. Box 1207
Buffalo, New York

ANALYTICAL RESULTS

Parameter-mg/l	Canal	Pond
Date Received	8/16/79	8/16/79
Date Sampled	8/15-16/79	8/15-16/79
Time	24 hr. Comp	24 hr. Comp
Cyanides, Chlorine Amenable	lt 0.01	lt 0.01
Cyanides, Total	0.02	lt 0.01
Ammonia	0.13	0.41
Phenolics	0.004	0.004
Iron, Soluble	1.09	5.20

All samples refridgerated at 4^{o} C.

lt = less than

The analytical procedures are in accordance with "Methods for Chemical Analysis of Water and Wastes", 1974, EPA, and "Standard Methods for the Examination of Water and Wastewater", 14th edition.

Alfred C. Feuz
Laboratory Manager