File Reg 7

FINAL ENGINEERING REPORT
CORRECTIVE MEASURES IMPLEMENTATION
ROTH BROS. SMELTING CORPORATION
EAST SYRACUSE, NEW YORK

by:

H&A of New York
Rochester, New York

and

IT Corporation
Rochester, New York

For

Roth Bros. Smelting Corp.
East Syracuse, New York

File No. 70185-048
July 1995

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Letter of Transmittal

Geotechnical Engineers & Environmental Consultants

To	NYS Department of Environmental Conservation	Date	27 July 1995
	50 Wolf Road	File Number	70185-048
	Albany, New York 12233-7252	Subject	Final Engineering Report
Attention	Steve Kaminski		

Copies	Date	Description
1	7/27/95	Final Engineering Report, Corrective Measures Implementation, Roth Bros Smelting

Remarks

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EASTERN HW PROGRAMS
DIVISION OF HAZARDOUS
SUBSTANCES REGULATION

Copy To

S. Eidt
D. Tuohy
N. Schwartz
R. Hull
J. Gauthier
P. Masters

Signed Margaret M. Bonn

189 North Water Street
Rochester, NY 14604
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Cambridge, Massachusetts
Denver, Colorado
Glastonbury, Connecticut
Silver Spring, Maryland
Scarborough, Maine
Bedford, New Hampshire
Cleveland, Ohio

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27 July 1995
File No. 70185-048

New York State Department of
Environmental Conservation
50 Wolf Road
Albany, New York 12233

Attention: Mr. Paul Counterman

Subject: Final Engineering Report
Corrective Measures Implementation
Roth Bros. Smelting Corporation
East Syracuse, New York

Ladies and Gentlemen:

On behalf of Roth Bros. Smelting Corporation, H&A of New York (H&A) and IT Corporation (IT) are pleased to submit this Final Engineering Report for the Corrective Measures Implementation at the Roth Bros site. The Final Engineering Report has been prepared in accordance with the requirements of the Order on Consent between the NYSDEC and Roth Bros dated 21 October 1994. It has also been prepared according to the content guidance provided by Mr. Paul Patel of the NYSDEC.

The Final Engineering Report includes documentation that demonstrates the Corrective Measures specified for the site were completed as stated in this report in compliance with the intent of the Corrective Measures Implementation Plan conditionally approved by the NYSDEC on 17 October 1994. The appendices and attachments to this report provide documentation that supports the statements presented in the report.

We look forward to NYSDEC's acceptance of this Final Engineering Report. Please do not hesitate to contact us if you have any questions.

Sincerely yours,

H&A OF NEW YORK

Margaret M. Bonn
Senior Engineer

Stanley E. Walker P.E.
Vice President

IT CORPORATION

John F. Gauthier, Esq. P.E.
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I. BACKGROUND

1-01. INTRODUCTION

This Final Engineering Report has been prepared jointly by H&A of New York and IT Corp. to document the implementation of the Corrective Measures at the Roth Bros site. Corrective Measures to remedy the elevated lead and PCB concentrations identified at the site were carried out on the site between September 1994 and June 1995. Submission of this report is a requirement of the Order on Consent between Roth Bros and the NYSDEC. An Operations and Maintenance Plan (O&M Plan) has been prepared and submitted under separate cover. Site activities as specified in the O&M Plan will continue as specified in the Plan, however no further corrective actions are anticipated.

The Final Engineering Report records the completion of the Corrective Measures and details how those activities were completed relative to the work plan presented in the Corrective Measures Implementation Plan (CMI). The report is organized as follows:

- Section I includes discussion of pertinent site background, past environmental investigations and reports, the site regulatory status and the goals of the selected corrective measure.

- Section II includes a summary of site activities, quantities treated, processing equipment utilized, waste shipments during the implementation, health and safety measures documentation and the treated soil placement areas. This section also includes a statistical evaluation of the treated soil data and summarizes significant variation from the CMI.

- Section III includes the statements by H&A of New York and IT Corporation regarding compliance of the completed activities to the CMI Plan as required in Section II of the Order on Consent.

- The attached tables, figures and appendices support the discussions and statements presented in the report.

1-02. SITE HISTORY

The site is located at 6223 Thompson Road in East Syracuse, New York (See Project Locus, Figure 1). Roth Bros. operate two plants (Plants 1 and 2). Both plants have been evaluated through RCRA Facility Assessment (RFA) and RCRA Facility Investigation (RFI), however only Plant 2 was subject to Corrective Measures for the PCB and lead concentrations identified.

Roth Bros. Plant 2 is bounded by industrial property on the north; a construction equipment rental company, Oberdorfer Foundries, Inc. and Plant 1 of Roth Bros. on the east; railroad tracks on the south; and an industrial park on the west.

Roth Bros operations at Plant 2 began in the mid-1950's. The facility manufactures aluminum ingots and sows. Roth Bros. formerly also was a secondary lead smelter, however the lead smelting operations closed in July 1991 to expand aluminum operations.

Environmental investigations have been completed and reports have been written since the initial

In the CMS prepared for the site, the corrective measures selected to achieve the above listed objectives include ex-situ polysilicate/portland cement stabilization to significantly reduce the leaching potential of the total lead contained in some site soils and excavation and off-site disposal for soils contaminated with PCBs greater than 50 ppm. Several treatability tests were run using contaminated site soils to develop the most desirable blend of the stabilization additives. The selected formulation for stabilization of leachable lead in the soil was 15% by weight portland cement, 25% moisture, and 0.2% polysilicate. The soils known to be contaminated with PCBs greater than 50 ppm were first treated to stabilize the lead then sent off-site for disposal. The CMS also indicated a cover needed to be placed over the redeposited stabilized soils to limit future contact with the material and to limit the infiltration of surface water through the treated material.

The following are the corrective actions and remediation goals as listed in the Statement of Basis prepared by the NYSDEC:

1) Those areas of soil that failed the TCLP test for lead (that is, leached lead at 5 ppm or more and is characteristic hazardous waste) must be treated, excavated or encapsulated to reduce its leaching potential.

2) Those soil areas that have tested over 825 ppm total lead must be addressed as in 1). above.

3) Confirmation soil sampling that tests over 825 ppm total lead will be addressed as in 1). above.

4) All areas that contain over 250 ppm total lead must be topped by an impermeable cover such as macadam.

5) If an area has over 50 ppm total PCBs, the soil must be removed to a suitable hazardous waste treatment facility.

6) Any area of soil that has been shown to be contaminated with PCBs but not metals, need only be covered.

These corrective actions and remediation goals were made a part of the CMI Plan dated September 1994.

II. CORRECTIVE MEASURES IMPLEMENTATION

This section discusses the implementation of the selected corrective measures at the Roth Bros site between the period of October 1994 and June 1995. It includes a discussion of compliance with and variation from the CMI Plan and also a statistical evaluation of the results of the laboratory analytical testing for TCLP lead completed on the treated soils.

2-01. SUMMARY OF ACTIVITIES

Processing equipment was mobilized to the site in October 1994, and excavation of identified PCB areas was initiated. The implementation of the corrective measures included the following steps: excavation of recognized contaminated lead and PCB material, pre-conditioning (screening, etc.), confirmation sampling of the extent of excavation, feed to the pugmill operation, addition of stabilization materials, treated soils sampling, placement of treated soils in CAMU cells, final grading and cover placement. These operations are discussed in the following sections.

2.1.1 Source Area/ Confirmation Sampling

The boundaries of areas marked for remediation on Figure 2 for PCB-contaminated soils and Figure 3 for lead-contaminated soils were estimates of areas that required remediation according to the remediation goals listed in Section 1-04. The extent of excavation and the proposed boundaries represented half of the distance to the next available clean boring or test pit sample result. To establish the actual boundary of the excavation H&A undertook a program of field sampling and laboratory confirmation analyses.

Field Testing - Three areas were identified as containing PCBs greater than 50 ppm. Those areas were originally excavated to the extent shown on Figure 2. Once the predesignated areal extent of soils were excavated, a sample was collected every 25 feet along the wall of the excavation at a depth of one foot. Those samples were field tested for PCBs greater than 50 ppm using colormetric testing (Chlor-N-Soil) test kits. Samples collected from the bottom of the excavation were also tested for PCBs greater than 50 ppm using the Chlor-N-Soil test kits.

Areas identified as containing total lead greater than 825 ppm or TCLP lead greater than 5 ppm were initially excavated to the extent as shown on Figure 3. Once the pre-designated areal extent of soil were excavated, samples were collected every 25 feet along the wall of the excavation at a depth of one foot. Those samples were analyzed using X-Ray fluorescence (XRF) for detection of total lead at levels greater than 825 ppm.

Prior to its use in the field for the detection of total lead at levels less than or greater than 825 ppm, a calibration curve was developed for the XRF analyzer. Samples were collected during the pilot test and analyzed by Upstate Laboratories for total lead in parts per million. Each sample was also analyzed on the XRF to obtain an intensity reading corresponding to its ppm reading. Figure 4, is a graph of the intensity readings from the XRF versus laboratory analyses of total lead in parts per million. Intensity readings greater than 1094 indicated a sample with greater than 825 ppm of total lead.

On a daily basis, four of the eight calibration standards were analyzed to confirm any shifting of

the intensity readings.

Confirmation Sampling - Once the PCB greater than 50 ppm and the total lead greater than 825 ppm excavations were complete, as confirmed by the XRF and the Chlor-N-Soil test kits, laboratory confirmation sampling was performed.

Generally, one confirmation sample was collected from each side of an outlier excavation. For larger excavations a confirmation sample was collected approximately every 100 feet along the sidewall. Bottom confirmation samples were collected from at least three random locations.

For a summary of PCB laboratory confirmation results, from the three PCB excavations, refer to Table I. For a summary of total lead laboratory confirmation results from all outlying excavations, refer to Table II. The sample number listed on the tables correspond to the primary boring or test pit number within the excavation area used to identify that area.

Any field or laboratory confirmation results which exceeded the 825 ppm total lead or the 50 ppm PCB criteria resulted in additional excavation as prescribed in the CMI at that location until confirmation results indicated levels below the criteria.

Figure 2 indicates the final areal extent of soil which was excavated as PCB-contaminated and processed through the pug mill for off-site disposal. Figure 5 indicates the final areal extent of soil which was excavated as lead-contaminated and treated prior to redeposition in the CAMU.

2.1.2 Processing Equipment

Lead-contaminated soil was treated and stabilized in a series of steps. The contaminated soil was excavated on a cell by cell basis to the limit of native material and to a depth between 1 and 4 feet. The excavated soil was first dried using portland cement and then moved to a powergrid to screen and size the soil. Soil unable to pass through the 2-inch grid was transferred to the "Brown Lennox," which is an impactor, and crushed to the 2-inch size. The graded soil was weighed, using a 966 Loader with Teledyne scale, and then entered the hopper to be mixed and stabilized in the Pugmill, provided by CMC Corporation. The Pugmill combined the soil, portland cement, water and PQN, a sodium silicate for increasing strength, and formed a stabilized concrete mixture which was then backfilled into emptied cells within the CAMU.

Moving the soil between the various stages of stabilization and fixation was accomplished using a PC 90 Trackhoe with a 36-inch bucket, CAT 950F and 892 JD Loaders. Soil was excavated from the cells using TB800, 690e, 790e Excavators and a 436 Backhoe with hammer. The material was loaded into articulated dump trucks. The treated soil was backfilled into emptied cells using decontaminated excavators and then moved and graded into place using a D21P-6 Dozer and D5H Dozer with a 6-way blade.

During the Fall of 1994, processing was accomplished in a similar manner except the soil material sizing was accomplished without the use of an impactor.

2.1.3 Quantities Treated

The CMI Plan, which was based on pre-excavation investigations indicated an estimated 20,000

tons of material would require treatment. Many of the excavations were expanded due to the discovery of additional materials that were greater than 825 ppm total lead. The difference between the originally anticipated areas of excavation and the actual excavations are illustrated on Figures 3 and 5. The total amount of lead and PCB contaminated soil which was processed and treated on the Roth Brothers project was 37,068.32 tons. This project was accomplished in a Fall 1994 phase which treated 12,410 tons and a Spring 1995 phase which processed 24,658.32 tons of contaminated soil. Refer to Tables III and IV, respectively, for quantity breakdowns by date.

There were a total of 63 days of production with an average production rate of 588 tons of soil processed per day. There were 24 production days in the Fall 1994 phase, at an average rate of 517 tons of soil processed per day. The Spring 1995 phase was 39 production days at an average rate of 632 tons of soil processed per day.

In accordance with the final formulation in the CMI, the soil was treated to produce, as closely as possible within equipment tolerances, a material with 15% portland cement, 0.2% polysilicate (PQN) diluted one-to-one with water, and a target moisture content range of 20-25%. Phosphate compounds were added routinely to the PQN mixture to prevent hydrogen gas generation caused by soils that contained aluminum and to lengthen the time of set. The combined totals of Fall and Spring phases used 5133 tons of portland cement and 27534 gallons of PQN in treating the soil.

During the Fall 1994 phase PCB contaminated soil was excavated from the areas shown on Figure 2. The soil was stabilized and transferred off-site to a TSDF (treatment, storage and disposal facility), Chemical Waste Management's Model City Landfill in Niagara Falls, New York. The weight of the treated PCB contaminated soils was 2300 tons.

2-02. PROCESS CONFIRMATION ANALYTICAL RESULTS

During treatment in the pugmill, a sample was collected after approximately every 100 tons of throughput from the conveyor exiting the equipment. Depending on the day's production, one sample every 200 to 300 tons was submitted for TCLP lead analysis following a 3-day cure period. This sampling frequency was consistent with the sampling plan established in the CMI.

A batch-composite sample was also collected off the pugmill during the day's production, with a quantity of sample being collected approximately every 100 tons of throughput to form the composite on a particular batch. All sample collection and transfer was performed by H&A personnel.

A total of 171 samples were collected off the pugmill and submitted for TCLP analysis following the 3-day cure period, during fall and spring operations. Fifty-nine composite samples were collected during the project and submitted to Upstate Laboratory in Syracuse, New York for TCLP lead analysis following the 28-day cure period. The final laboratory reports are contained in Appendix A. Sample numbers reference the batch number. Batches were generally considered to be a day's output or a 12 hour shift output when the project was on a 24 hour schedule. For example, sample number S16-2 would be the second sample obtained during the sixteenth day's batch. The composite samples representing the 28 day results are labeled with a "Comp" prefix - Comp S16, for example.

2.2.1 Statistical Analysis

The required statistical analysis of the laboratory test results for the treated soils samples is

prescribed in the CMI and more specifically defined in the Order on Consent. The CMI indicates that a minimum of 84 samples be collected to provide a sample population large enough to provide a statistical evaluation with a 95% confidence level (the probability that the sample area will not be declared clean when it is actually dirty).

A total of 171 three-day cure samples and 59 twenty-eight day samples were submitted for analysis and subsequently included in the statistical evaluation. This sample population exceeded that originally specified in the CMI. The statistical evaluation was run separately for both the 3-day and 28-day cure samples. The inputs and outputs of the evaluation are presented in Appendix B.

The detection limit for the analytical laboratory method was 0.001 ppm TCLP lead. All samples having leaching characteristics less than that level were reported by Upstate Laboratory to be <0.001 or "non-detect." Forty-seven percent of the 3-day cure samples were non-detect, and 59% of the 28-day cure samples were reported as non-detect. Since this population of data was important to include in the statistical evaluation, these values were conservatively converted to 0.001 ppm for the evaluation, although the actual values were reported by the lab as being less than 0.001 ppm.

In accordance with the Order on Consent, a parametric test for percentiles based on tolerance levels (95% confidence that 95% of the treated waste material confirmation sample population is below the treatment standard) was used to show that the data was statistically less than the treatment standard of 2.5 ppm. An EPA document, "Methods for Evaluating the Attainment of Cleanup Standards, Volume 1: Soils and Solid Media" was used for guidance in applying the statistical test. Specifically, the statistical tables of the EPA document were used for determining the constant k. To meet the confidence levels and percentage criteria found in the Order on Consent, the alpha value or desired false positive rate was set at 5% and the P_o value or the portion of sample area with contaminant concentrations greater than the cleanup standard was set at 5%.

The 3-day cure TCLP data is not arithmetically normally distributed, but it does pass the simple Coefficient of Variance test for log-normal distribution. The mean and the standard deviation of the log-transformed data were calculated and input to the tolerance limit equation and yielded an upper tolerance limit of 0.0353. The constant k was determined from the tables contained in the reference document for $n=100$, $P_o=0.05$, and alpha$=0.05$. The log-transformed cleanup standard is 0.916. Therefore, since the tolerance limit is less than the log-transformed cleanup standard, the 3-day TCLP data meets the treatment criteria set in the Order on Consent.

The 28-day cure TCLP data is not arithmetically normally distributed, but it does pass the simple Coefficient of Variance test for log-normal distribution. The mean and the standard deviation of the log-transformed data was calculated and input to the tolerance limit equation and yielded an upper tolerance limit of -1.104. The constant k was determined from the tables contained in the reference document for $n=50$, $P_o=0.05$, and alpha$=0.05$. The log-transformed cleanup standard is 0.916. Therefore, since the tolerance limit is less than the log-transformed cleanup standard the 28-day TCLP data meets the treatment criteria established in the Order on Consent.

2-03. PLACEMENT AREAS (CAMU ISSUES)

The CAMU as shown on the CMI Plan figures was divided into 20 cells and 2 reserve cells. Soil was also excavated from additional outlying areas. During the Fall 1994 phase Cells 1 through 7 as well as the 3 PCB outlying areas and 7 outlying lead-contaminated areas were excavated treated and backfilled. During the Spring 1995 phase the remaining 14 cells, including the reserve cells, were excavated, treated and backfilled, with the exception of Cell 20. Cell 20 was the location of the pugmill and was located on a non-contaminated area. The Cell 20 volume was not needed for backfill and was therefore not excavated.

The proposed CAMU area was approximately 132,155 square feet. The actual area differed by an increase of approximately 5,395 square feet. The as-built area was approximately 137,550 square feet, additional area was added primarily to the southwest corner of the site, refer to Figure 6.

The Fall phase resulted in 17 areas excavated for treatment. The areas ranged from 700 to 6,300 square feet with an average depth of 3.5 feet. The excavations were taken on a cell by cell basis until native soil was reached, at 1-4 feet below grade.

The Spring phase resulted in 14 areas excavated for treatment with areas ranging from 3,000 to 11,600 square feet with an average depth of 3.5 feet until native material was reached. At the completion of the Spring phase, the treated CAMU area was covered with three inches of compacted select granular fill, three inches of asphaltic concrete binder and then finally covered with two inches of asphaltic wear surface. The treated soils and cover were graded towards the east/northeast side of the CAMU area as planned in the CMI Plan. The final grades for the treated material and asphalt cover are indicated on Figure 6.

2-04. SIGNIFICANT FIELD CHANGES

During the period of implementation of the selected Corrective Measures several field changes to the original CMI Plan were necessitated by the site conditions encountered. Contact with the NYSDEC was made as soon as practicable to discuss the proposed field changes and receive their concurrence with the change. Documentation of the NYSDEC approvals are contained in Appendix C of this report. The field changes were as follows:

Schedule - The Corrective Measures were initiated in the fall of 1994. The CMI Plan originally anticipated project completion in 1994. Due to processing difficulties and the increase in the volume of material requiring treatment, completion in 1994 was not considered feasible. During a period of the late fall 1994, the operation was expanded to a 24 hour per day effort. In mid-December a decision was made to shut the processing down due to the on-set of freezing weather conditions. The project was restarted in April 1995, and the remaining materials requiring stabilization were treated, placed and final graded by the beginning of June 1995.

Outfall 003 - Outfall 003 was shown on the figures submitted with the CMI Plan to be a large area surrounding a manhole in Roth's water discharge system. A review of previous investigation results indicated that the previously identified contaminated material was confined to the sediment at the base of the manhole. During the corrective measures implementation the sediment was removed from the manhole and treated with other contaminated material, however, the area as shown on the CMI figures was deemed not to require excavation for treatment.

Oversize Debris - Oversize debris, not passing through the screening operation, was accumulated at the site during the Fall 1994 operations. The volume of the material was greater than anticipated. During December 1994 approval from the NYSDEC was received to allow a limited pilot test to encapsulate this material in a portland cement and polysilicate slurry in cell 6 of the CAMU. Confirmation samples were obtained from the mixture. Confirmation sampling results for this material met the treatment standard however, the approach for handling the oversize material was not continued during the Spring 1995 operations.

Concrete/Asphalt Rubble Placement - During the spring operations quantities of concrete and asphalt rubble were placed into cells of the CAMU. The material was placed on top of and below layers of treated soils. Permission for this activity was received from the NYSDEC, and documentation is contained in Appendix C.

Hammermill Shredder - During the spring construction contractor mobilization a shredder/crusher unit was brought to the site to manage the volume of material that did not pass through the screening operation. The NYSDEC granted permission for the addition of this equipment to the processing operation. Oversized debris that could not be managed by the shredder was collected, decontaminated of loose soil matter, and either sent off-site as a waste or to scrap metal dealers.

Asphalt Cover Design - Due to the strength of the placed treated material observed during CAMU construction a proposal was made to decrease the planned thickness of select granular fill and to eliminate the regraded clean material layer from the cover design. This proposal was accepted by the NYSDEC and the alternate cover design was implemented.

Cover for <825 ppm Soils - Soils that were determined to have less than 825 ppm total lead were accumulated during the project. According to the CMI Plan, this material was to be used as backfill at the outlier excavations. However, this material was determined to be inappropriate for much of the backfill requirements due to particle size, strength, and other physical characteristics. The excavation that extended west from the CAMU to Ponded Outfall 001, not originally anticipated to be excavated was backfilled with the <825 ppm material. The remaining <825 ppm material was graded over the area north of the CAMU. The Statement of Basis requires that the soils <825 ppm be covered with an impermeable cover. Roth had a 3 inch clay cover placed over this graded material. Top-soil was also placed and grass planted over this area. Appendix C contains documentation of the impermeability of the clay brought to the site for this purpose.

2-05. WASTE SHIPMENTS

A total of ninety-nine shipments of PCB waste were manifested to the Model City Landfill during the Fall portion of the project. The PCB waste was shipped between 10 November and 5 December 1994 using manifest numbers 94001 to 94099. This waste was treated to stabilize any leachable lead prior to shipment; it was given the hazardous waste number B007. The total weight of the PCB waste shipped off-site was 2300 tons.

The only additional waste shipped from the site and generated during the project were seven rolloffs of miscellaneous debris excavated from the CAMU area, including: plastic, wood and large pieces of scrap metal. The first rolloff was shipped on 17 May 1995 to Model City Landfill, as a characteristic hazardous waste for TCLP lead criteria, manifest document number 95001. The remaining six rolloffs

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contained approximately 775 tons of debris and were shipped as a non-hazardous waste to the Ontario County Landfill after passing the TCLP test criteria.

2-06. HEALTH AND SAFETY

Health and Safety (H & S) of workers and the surrounding neighborhood was a primary concern on this project. The details of the precautions taken are outlined in the Site Specific Health and Safety Plan, Appendix F of the CMI, September 1994 as well as the project's Health and Safety Plan dated October 14, 1994. As a result of daily tailgate safety meetings, constant H & S awareness, and perimeter monitoring, the project workforce experienced zero OSHA recordable incidents and zero vehicle accidents during the 7032 hours through May 31, 1995. H & S equipment included an HNu PI101, Mini Rams, LEL - Passport, personal pumps, Calibrators, Flow Regulator, Field Radios, Decibel Meter and a dedicated Washer/Dryer for washing lead contaminated work uniforms.

This site's lead contamination was a primary concern. The CMI requirements for dust and hydrogen gas monitoring were met. When high levels were reached appropriate action was taken. Various dust control measures were used, such as mobilizing a water cannon to wet the contaminated soil and material haul routes were concentrated on asphalt surfaces to minimize dust generation. Employee blood levels were tested for lead at the beginning and end of the project.

All standard decontamination procedures were followed. This included the requirement that all workers shower upon leaving the exclusion zone. All equipment was thoroughly decontaminated, inspected and photographed before leaving the site.

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III. ENGINEER'S CERTIFICATION

Based on concurrent inquiry of the H&A of New York staff members directly involved in obtaining the information presented herein and review of that information, it is the opinion of the undersigned, Stanley E. Walker, that the CMI Plan was implemented and that the construction was completed in accordance with the NYSDEC approved CMI Plan as modified by the approved field changes identified in Section 2-04. of this report. It is also the opinion of the undersigned that, as presented and discussed in Section 2.2.1 of this report, the results of the confirmation testing of the treated soil demonstrate with a confidence level of 95% that 95% of the levels of TCLP lead are statistically below the 2.5 mg/l standard established in the Order on Consent.

Stanley E. Walker, P.E.
Vice President
H&A of New York

STATE OF NEW YORK
STANLEY EDSON WALKER
No. 060181-1
LICENSED PROFESSIONAL ENGINEER

I state that the treated material was placed within the CAMU limits as illustrated in Figure 6, drawing number 515599-E10. It is the opinion of the undersigned, John F. Gauthier that the CMI Plan was implemented and that the construction was completed in accordance with NYSDEC approved CMI Plans as modified by the approved field changes identified in Section 2-04 of this report. I have personally examined and am familiar with the information in this report. Based upon our knowledge and inquiry of those individuals responsible for obtaining the information presented, the foregoing information is true, accurate and complete based upon the scope of work performed.

John F. Gauthier, P.E.

IT Corporation
Project Engineer

STATE OF NEW YORK
JOHN FREDERICK GAUTHIER
064277
LICENSED PROFESSIONAL ENGINEER

TABLE I
ROTH BROS. SMELTING CORP.
ENGINEERING REPORT
SUMMARY OF PCB CONFIRMATION SAMPLING ANALYSES

SAMPLE DATE	SAMPLE LOCATION	SAMPLE I.D.	PCB ANALYSIS (ppm)
10/28/94	PCB AREA 1	PCB A1-NORTH	15
10/28/94	PCB AREA 1	PCB A1-SOUTH	8
10/28/94	PCB AREA 1	PCB A1-EAST	12
10/28/94	PCB AREA 1	PCB A1-WEST	26
10/28/94	PCB AREA 1	PCB A1-BOTTOM	ND
10/28/94	PCB AREA 2	PCB A2-NORTH	ND
10/28/94	PCB AREA 2	PCB A2-SOUTH	ND
10/28/94	PCB AREA 2	PCB A2-EAST	ND
10/28/94	PCB AREA 2	PCB A2-WEST	ND
10/28/94	PCB AREA 2	PCB A2-BOTTOM	ND
11/04/94	PCB AREA 3	PCB A3-NORTH	ND
11/04/94	PCB AREA 3	PCB A3-SOUTH	5
11/04/94	PCB AREA 3	PCB A3-EAST	2
11/04/94	PCB AREA 3	PCB A3-WEST	6
11/04/94	PCB AREA 3	PCB A3-BOTTOM	6

TABLE II
ROTH BROS. SMELTING CORP.
ENGINEERING REPORT
SUMMARY OF TOTAL LEAD CONFIRMATION SAMPLING ANALYSES

SAMPLE DATE	SAMPLE LOCATION	SAMPLE I.D.	TOTAL LEAD (ppm)
11/10/94	B206	B206-NORTH	56
11/10/94	B206	B206-SOUTH	86
11/10/94	B206	B206-EAST	250
11/10/94	B206	B206-BOTTOM	290
11/13/94	TP-12	TP-12 NORTH	81
11/15/94	J8267	J8267-NORTH	35
11/15/94	J8267	J8267-SOUTH	30
11/15/94	J8267	J8267-EAST	360
11/15/94	J8267	J8267-WEST	12
11/15/94	J8267	J8267-BOTTOM	6.2
11/30/94	J8266	J8266-NORTH	12
11/30/94	J8266	J8266-SOUTH	5.8
11/30/94	J8266	J8266-EAST	9.8
11/30/94	J8266	J826WEST	4.1
11/30/94	J8266	J8266-BOTTOM	30
12/05/94	B264	B264-NORTH	480
12/05/94	B264	B264-SOUTH	8.1
12/05/94	B264	B264-EAST	11
12/05/94	B264	B264-WEST	28
12/05/94	B264	B264-BOTTOM	39
12/05/94	B264-SOUTH	DUPLICATE 1	5.6
12/04/94	TP-18	TP-18 S1	54
12/04/94	TP-18	TP-18 S2	76
12/04/94	TP-18	TP-18 S3	550
12/04/94	TP-18	TP-18 S4	57
12/04/94	TP-18	TP-18 S5	300
12/04/94	TP-18	TP-18 S6	87
12/04/94	TP-18	TP-18 S7	320
12/04/94	TP-18	TP-18 S8	2400
05/09/95	TP-18	TP-18 S8R	410
12/04/94	TP-18	TP-18 B1	96
12/04/94	TP-18	TP-18 B2	29
12/04/94	TP-18	TP-18 B3	190
04/03/95	J8265	J8265-NORTH	5.7
04/03/95	J8265	J8265-SOUTH	2.8

TABLE II
ROTH BROS. SMELTING CORP.
ENGINEERING REPORT
SUMMARY OF TOTAL LEAD CONFIRMATION SAMPLING ANALYSES

SAMPLE DATE	SAMPLE LOCATION	SAMPLE I.D.	TOTAL LEAD (ppm)
04/03/95	J8265	J8265-EAST	7.5
04/03/95	J8265	J8265-WEST	13
04/03/95	J8265	J8265-BOTTOM	2.7
04/05/95	B290	B290-BOTTOM 1	77
04/05/95	B290	B290-BOTTOM 2	140
04/05/95	B290	B290-NORTH	350
04/05/95	B290	B290-SOUTH	25
04/05/95	B290	B290-EAST 1	190
04/05/95	B290	B290 EAST 2	210
04/07/95	B225	B225-EAST	9.5
04/07/95	B225	B225-NORTH	230
04/07/95	B225	B225-SOUTH	47
04/07/95	B225	B225-WEST	5.7
04/07/95	B225	B225-BOTTOM 1	5.2
04/07/95	B225	B225-BOTTOM 2	15
04/08/95	B210/215	B210/215-WEST 1	28
04/08/95	B210/215	B210/215-WEST 2	160
04/08/95	B210/215	B210/215-SOUTHWEST	210
04/08/95	B210/215	B210/215-SOUTHEAST	720
04/08/95	B210/215	B210/215-EAST 1	100
04/08/95	B210/215	B210/215-EAST 2	110
04/08/95	B210/215	B210/215-BOTTOM 1	92
04/08/95	B210/215	B210/215-BOTTOM 2	5.1
04/08/95	B210/215	B210/215-BOTTOM 3	110
04/08/95	B210/215	B210/215-NORTH	1100
04/13/95	B210/215	B210/215-NORTH R	130
04/08/95	B210/215 WEST 2	DUPLICATE 2	94
04/08/95	B210/215 BOTTOM 3	DUPLICATE 3	55
04/11/95	OUTFALL 001	OUTFALL 001 S1R	140
04/12/95	OUTFALL 001	OUTFALL 001 S5	17
04/13/95	OUTFALL 001	OUTFALL 001 S9	11
04/13/95	OUTFALL 001	OUTFALL 001 S11	66
04/13/95	B234	B234 NORTHWEST	6.7
04/13/95	B234	B234 NORTHEAST	34
04/14/95	B234	B234 BOTTOM	4.7

TABLE II
ROTH BROS. SMELTING CORP.
ENGINEERING REPORT
SUMMARY OF TOTAL LEAD CONFIRMATION SAMPLING ANALYSES

SAMPLE DATE	SAMPLE LOCATION	SAMPLE I.D.	TOTAL LEAD (ppm)
04/14/95	B234	B234 SOUTHWEST	23
04/17/95	B234	B234 EAST	140
04/17/95	B234	B234 SOUTHEAST	11
04/17/95	B234	B234 BOTTOM 2	370
04/19/95	J8271	J8271-NORTH2	19
04/19/95	J8271	J8271-EAST	20
04/19/95	J8271	J8271-SOUTH 2	27
04/20/95	J8271	J8271-NORTH 1	670
04/20/95	J8271	J8271-SOUTH 1	16
04/20/95	J8271	J8271-WEST 1	380
04/20/95	J8271	J8271-BOTTOM	25
04/21/95	B282-285	B282-285 SOUTH	150
05/01/95	B282-285	B282-285 NORTH	15
04/26/95	B282-285	B282-285 BOTTOM 1	16
04/26/95	B282-285	B282-285 BOTTOM 2	19
05/01/95	B282-285	B282-285 BOTTOM 3	190
04/24/95	B282-285	B282-285 WEST 1	12
04/26/95	B282-285	B282-285 WEST 2	72
04/28/95	B282-285	B282-285 WEST 3	83
04/24/95	B282-285	B282-285 EAST 1	250
04/26/95	B282-285	B282-285 EAST 2	160
05/01/95	LBS-1	LBS-1 NORTH	70
05/01/95	LBS-1	LBS-1 SOUTH	30
05/01/95	LBS-1	LBS-1 WEST	5.5
05/01/95	LBS-1	LBS-1 BOTTOM	2.9
05/01/95	B220	B220 SOUTH	11
05/01/95	B220	B220 WEST	25
05/01/95	B220	B220 BOTTOM	5.4
05/04/95	OUTFALL 002	OUTFALL 002 S1R	15
05/04/95	OUTFALL 002	OUTFALL 002 S3	4.1
05/04/95	OUTFALL 002	OUTFALL 002 S5	4.9
05/04/95	OUTFALL 002	OUTFALL 002 S7	3
05/04/95	OUTFALL 002 S7	DUPLICATE 4	2.6
05/05/95	OUTFALL 002	OUTFALL 002 S9	6.7
05/05/95	OUTFALL 002	OUTFALL 002 S11	8.7

TABLE II
ROTH BROS. SMELTING CORP.
ENGINEERING REPORT
SUMMARY OF TOTAL LEAD CONFIRMATION SAMPLING ANALYSES

SAMPLE DATE	SAMPLE LOCATION	SAMPLE I.D.	TOTAL LEAD (ppm)
05/05/95	OUTFALL 002	OUTFALL 002 S13	3.1
05/05/95	OUTFALL 002 S13	DUPLICATE 5	1.6
05/05/95	OUTFALL 002	OUTFALL 002 S15	19
05/05/95	OUTFALL 002 S15	DUPLICATE 6	6.6
05/05/95	OUTFALL 002	OUTFALL 002 S17	6.1
05/09/95	B219	B219 EAST	660
05/10/95	OUTLYER 2032	OUTLYER 2032 S1	82
05/10/95	OUTLYER 2032	OUTLYER 2032 S2	1000
05/15/95	OUTLYER 2032	OUTLYER 2032 S2R	280
05/10/95	OUTLYER 2032	OUTLYER 2032 S4	80
05/10/95	OUTLYER 2032	OUTLYER 2032 S5	50
05/10/95	OUTLYER 2032	OUTLYER 2032 S6	210
05/10/95	OUTLYER 2032	OUTLYER 2032 S9	6100
05/15/95	OUTLYER 2032	OUTLYER 2032 S9R	86
05/11/95	OUTLYER 2032	OUTLYER 2032 S8R	240
05/11/95	OUTLYER 2032	OUTLYER 2032 S11R	500
05/11/95	OUTLYER 2032	OUTLYER 2032 B1	28
05/17/95	OUTFALL 001 POND	POND BOTTOM	940
05/17/95	OUTFALL 001 POND	POND NORTH	530
05/17/95	OUTFALL 001 POND	POND WEST	21
05/23/95	OUTFALL 001 POND	POND BOTTOM R	3.6

TABLE III
AMOUNT MATERIAL PROCESSED

Date	Tons Processed	Notations/Comments
11-21-94	205.94 ton	Night
11-22-94	200.00 ton	Day - *
11-22-94	0.00 ton	Night - Demob. for Thanksgiving Break
11-29-94	200.00 ton	Day - *
11-29-94	236.39 ton	Night
11-30-94	240.22 ton	Day - *
11-30-94	588.10 ton	Night
12-1-94	740.00 ton	Day
12-1-94	580.00 ton	Night
12-2-94	899.10 ton	Day
12-2-94	200.00 ton	Night - *
12-3-94	284.00 ton	Day
12-3-94	200.00 ton	Night - *
12-4-94	0.00 ton	No soil processed
12-5-94	734.10 ton	Day
12-5-94	200.00 ton	Night - *
12-10-94	0.00 ton	No soil processed
12-15-94	0.00 ton	Pug mill decon.
12-16-94	100.00 ton	*
12-17-94	409.62 ton	
12-18-94	100.00 ton	*
12-19-94	0.00 ton	Demobilization for winter
TOTAL	**12,410.00**	**(Total tons of soil processed in Fall/Winter 1994)**

* Estimated tons of soil processed from field notes

IT CORPORATION
ROTH BROTHERS PROJECT
Project: 5X5599/515599

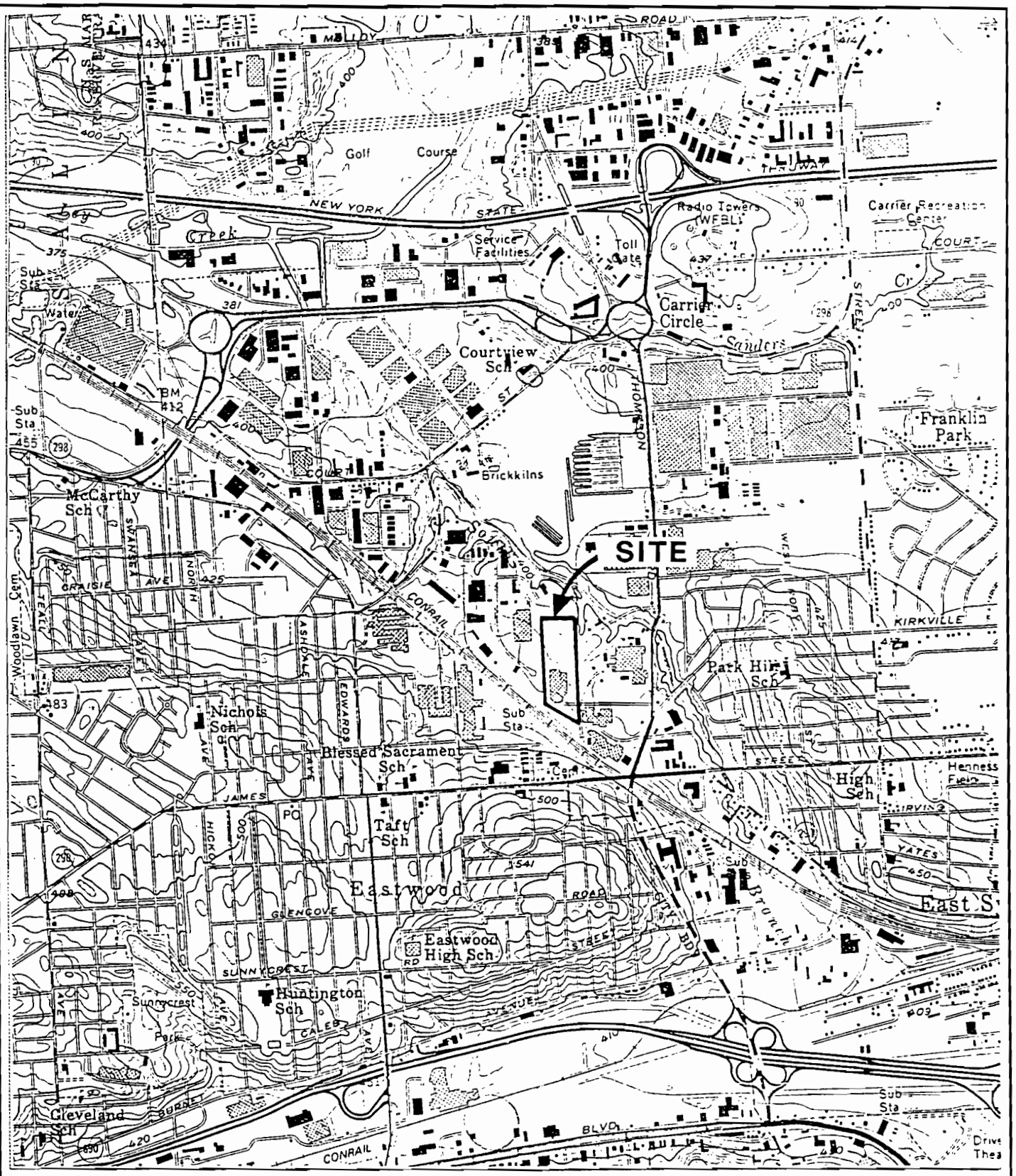
Report 30-May-95

TABLE IV AMOUNT MATERIAL PROCESSED			
DATE	SCALES/LBS	CONV/TONS	NOTATIONS/COMMENTS
To 3/27		12,410.00 ton	Fall 1994 Production
04-05-95	lbs	0.00 ton	Weather Delay
04-06-95	lbs	0.00 ton	Weather Delay
04-07-95	811,460 lbs	405.73 ton	3 hrs-Down Time-Mechanical
04-08-95	646,050 lbs	323.03 ton	3 hrs-Down Time-Mechanical
04-10-95	1,045,400 lbs	522.70 ton	2 hrs-Down Time-Mechanical
4-11-95	1,078,630	539.32 ton	
04-12-95	579,820 lbs	289.91 ton	Rained most of day
04-13-95	0 lbs	0.00 ton	Soil conditioning impacts
04-14-95	0 lbs	0.00 ton	Soil conditioning impacts
04-17-95	1,427,860 lbs	713.93 ton	Work began at 10:00 am/Pug mill ran 8 hrs
04-18-95	1,414,240 lbs	707.12 ton	Pug mill ran 8 hrs due to conditioning impacts
04-19-95	1,242,830 lbs	621.42 ton	
04-20-95	2,042,760 lbs	1,021.38 ton	No refuse encountered in cell excavation
04-21-05	545,320 lbs	272.66 ton	Rained most of day
04-24-95	1,623,500 lbs	811.75 ton	
04-25-95	1,422,200 lbs	711.10 ton	
04-26-95	2,212,610 lbs	1,106.31 ton	
04-27-95	1,673,970 lbs	839.99 ton	1.5 hrs-Down Time-PQN motor breakdown
04-28-95	1,877,140 lbs	938.57 ton	
05-01-95	2,027,270 lbs	1,013.64 ton	
05-02-95	427,600 lbs	213.80 ton	Equipment breakdown

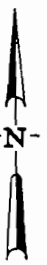
TABLE IV
AMOUNT MATERIAL PROCESSED

DATE	SCALES/LBS	CONV/TONS	NOTATIONS/COMMENTS
To 3/27		12,410.00 ton	Fall 1994 Production
05-03-95	618,550 lbs	309.28 ton	Equipment down Until 12:30 pm
05-04-95	1,417,080 lbs	708.54 ton	Amount processed prior to scale breakdown
05-04-95B	1,000,000 lbs	500.00 ton	Amount processed using pug mill weigh system
05-05-95	177,000 lbs	88.50 ton	Amount processed using pug mill weigh system
05-05-95B	837,930 lbs	418.97 ton	Amount processed using teledyne scale on 966
05-06-95	1,621,140 lbs	810.57 ton	
05-08-95	2,018,270 lbs	1,009.14 ton	
05-09-95	2,420,120 lbs	1,210.06 ton	
05-10-95	1,608,040 lbs	804.02 ton	
05-11-95	1,137,240 lbs	568.62 ton	Operated pug mill approx 4 Hrs.
05-12-95	1,515,300 lbs	757.65 ton	
05-13-95	1,009,690 lbs	504.85 ton	
05-15-95	1,040,700 lbs	520.35 ton	
05-16-95	253,140 lbs	126.57 ton	Equipment breakdown
05-17-95	1,534,250 lbs	767.13 ton	
05-18-95	814,210 lbs	407.11 ton	
05-19-95	1,023,880 lbs	511.94 ton	
05-20-95	1,202,560 lbs	601.28 ton	
05-22-95	2,223,870 lbs	1,111.94 ton	
05-23-95	1,610,570 lbs	805.29 ton	
05-24-95	749,910 lbs	374.96 ton	
05-25-95	1,384,530 lbs	692.27 ton	
TOTALS	49,316,640.00 lbs	24,658.32 ton	(TOTAL AMOUNT PROCESSED IN SPRING 1995 ONLY)

Total Tons Processed/Project: (Fall-94 & Spr.-95)..... **37,068.32 TONS**



LATITUDE: 43° 04'28"N LONGITUDE: 76° 05'52"W



QUADRANGLE LOCATION

U.S.G.S. QUADRANGLE: SYRACUSE EAST, N.Y.

H & A OF NEW YORK

Geotechnical Engineers & Environmental Consultants

ROTH BROS. SMELTING CORP.
EAST SYRACUSE, NEW YORK

PROJECT LOCUS

SCALE: 1" = 2000'

JULY 1995

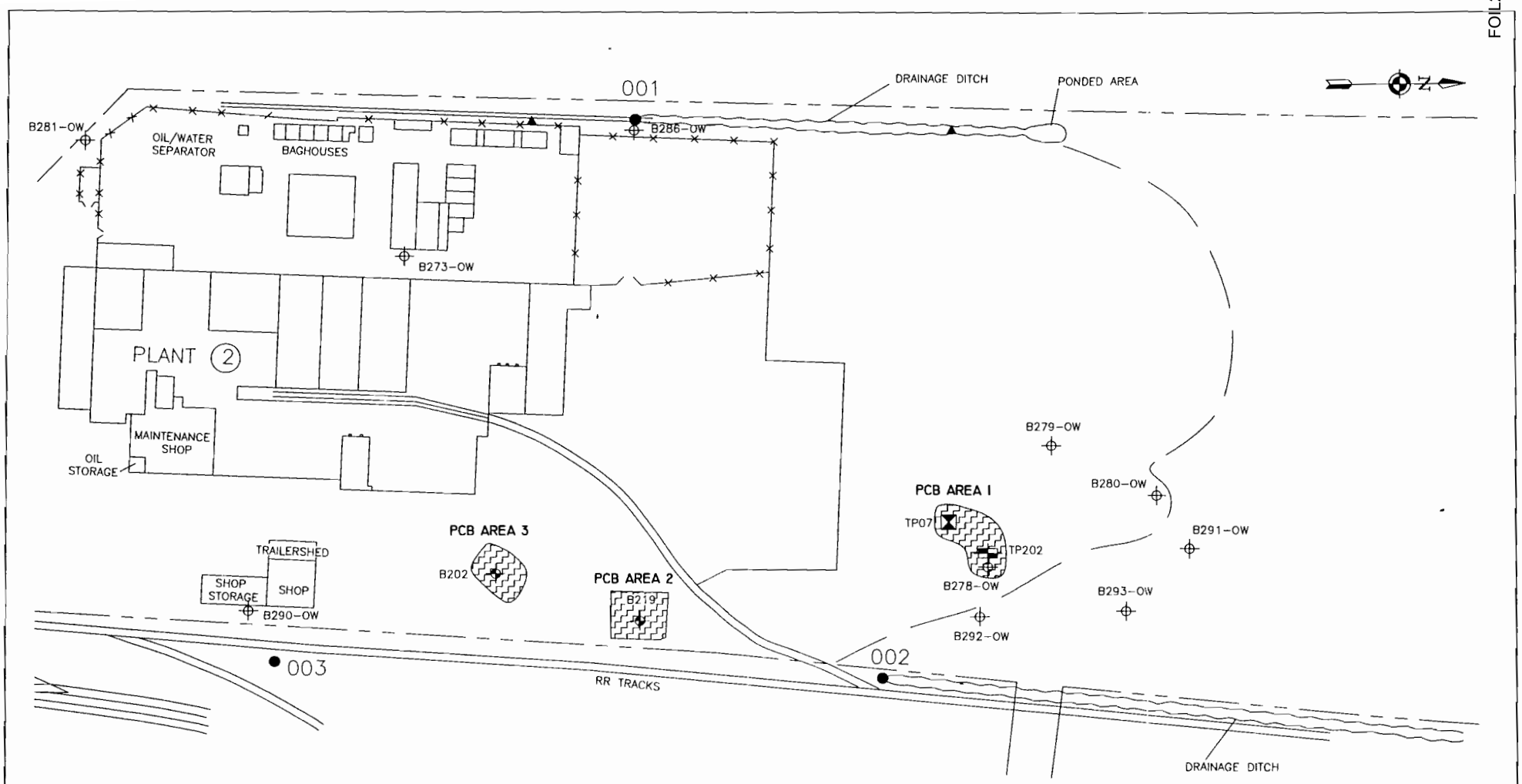
FOIL207252

FILENAME: 70185048\GPL001A.MAN

FIGURE 1

FILE No. 70185-048

FOIL207253



NOTES:

AREA WITHIN HATCHURED MARKS INCLUDES SOIL WITH PCB'S CONCENTRATIONS > 50 PPM.

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ROTH BROS. SMELTING CORPORATION
EAST SYRACUSE, NEW YORK

PROPOSED AND FINAL PCB EXCAVATION AREAS

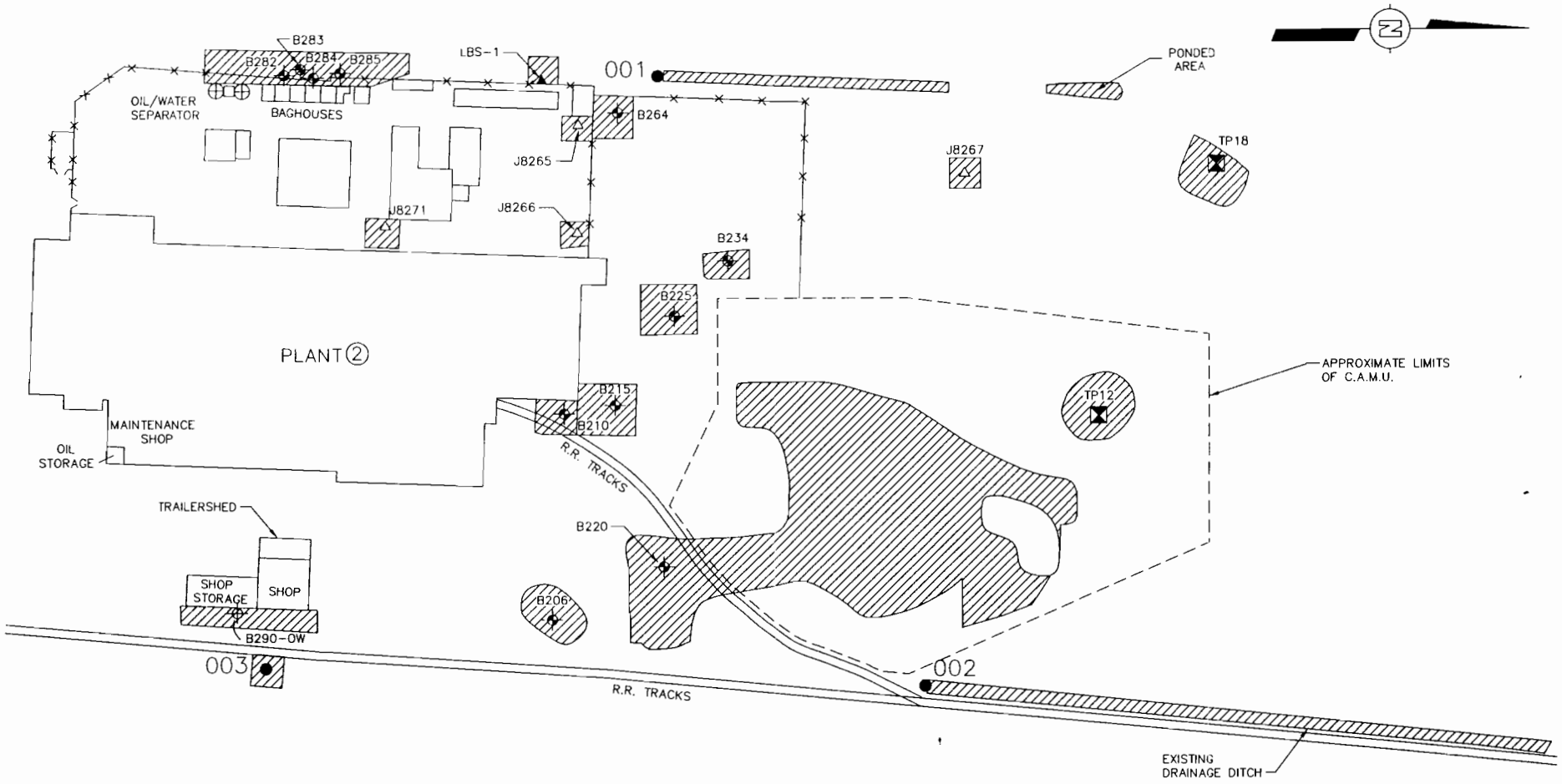
SCALE: 1 IN. = 100 FT.

JULY 1995

FILENAME 70185-048 CD0003B DWG

FIGURE 2

FILE No. 70185-048



LEGEND:

AREA WITHIN HATCH MARKS INCLUDES SOIL WITH TOTAL LEAD CONCENTRATIONS > 825 PPM. AND, TCLP LEAD CONCENTRATIONS > 5 PPM.

SCALE

0 100 200 FEET

REFERENCE:

H & A OF NEW YORK DWG. NO. 70185-43: NO TITLE, PREPARED FOR ROTH BROS. SMELTING CORPORATION, SCALE: 1"=100', DATED: JULY 1993.

H & A OF NEW YORK

Geotechnical Engineers & Environmental Consultants

ROTH BROS. SMELTING CORPORATION
EAST SYRACUSE, NEW YORK

PROPOSED TOTAL AND TCLP LEAD EXCAVATION LIMITS

SCALE: 1 IN. = 100 FT. JULY 1995

FILENAME: 70185-048:CDD001B.DWG

FIGURE 3

FILE No. 70185-048

FOIL207254

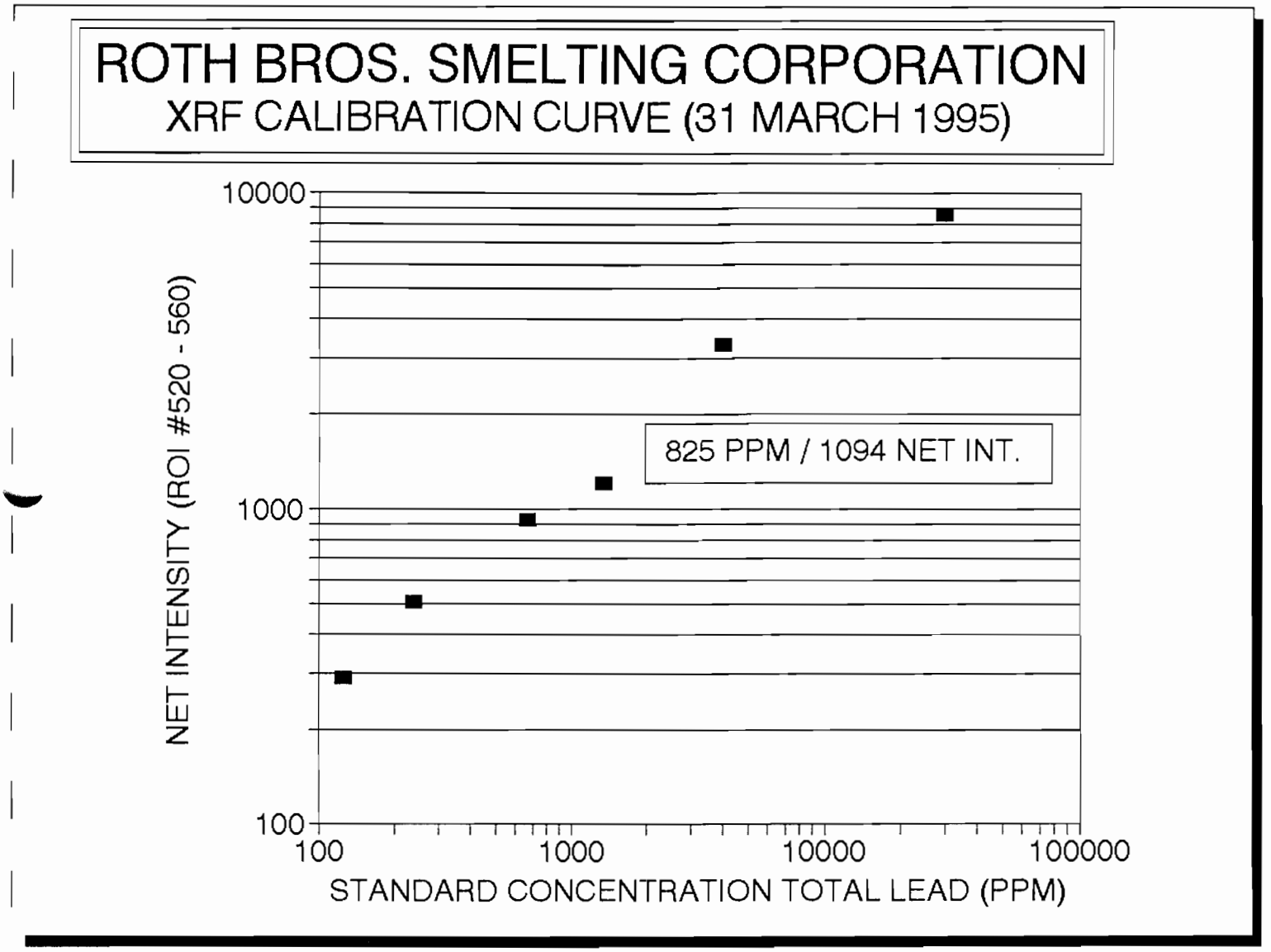
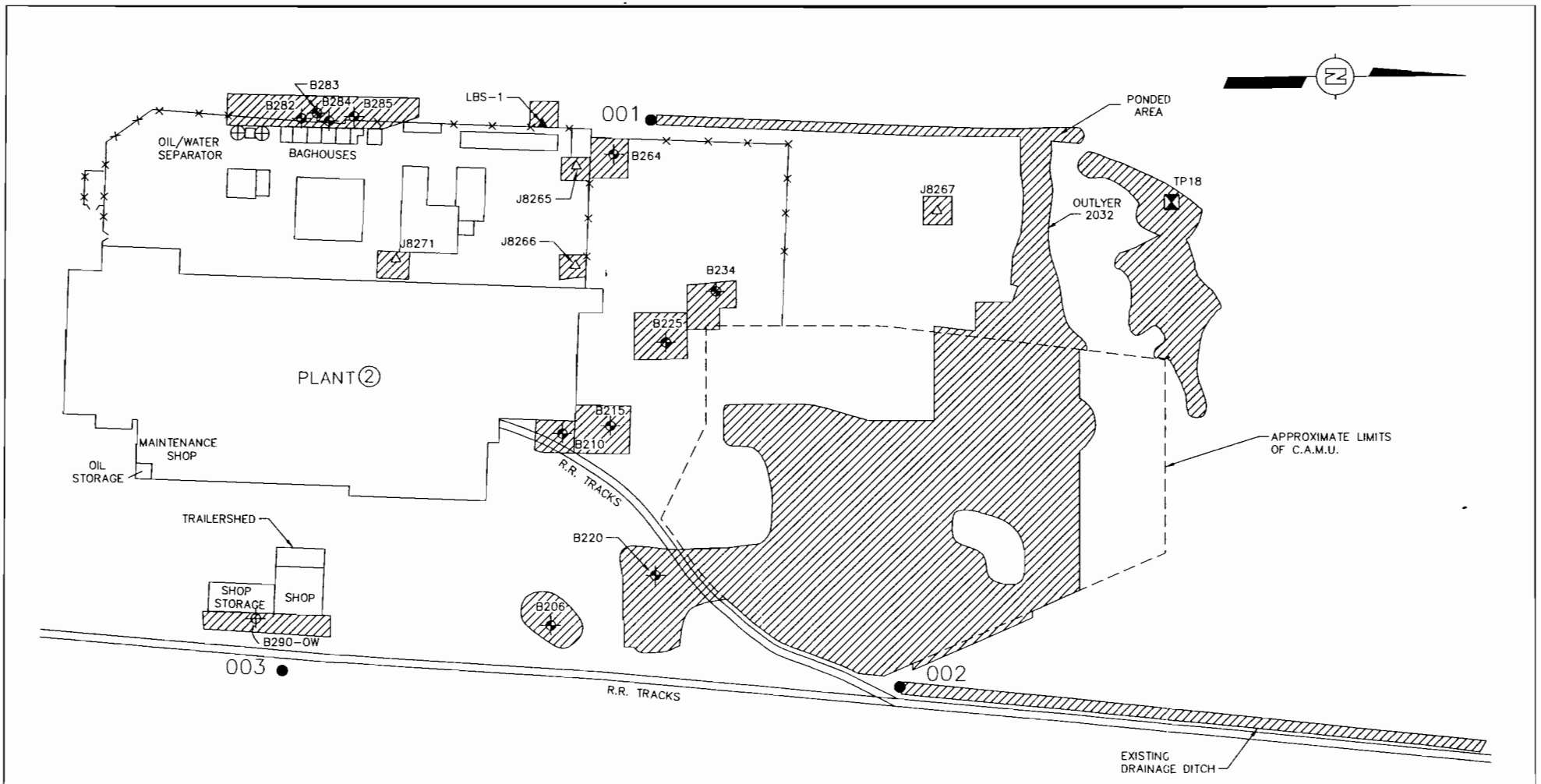

ROTH BROS. SMELTING CORPORATION
XRF CALIBRATION CURVE (31 MARCH 1995)
10000
1000
100
NET INTENSITY (ROI #520 - 560)
825 PPM / 1094 NET INT.
100
1000
10000
100000
STANDARD CONCENTRATION TOTAL LEAD (PPM)

FIGURE 4

FOIL207256



LEGEND:

AREA WITHIN HATCH MARKS INCLUDES SOIL WITH TOTAL LEAD CONCENTRATIONS > 825 PPM. AND, TCLP LEAD CONCENTRATIONS > 5 PPM.

SCALE

0 100 200 FEET

REFERENCE:

H & A OF NEW YORK DWG. NO. 70185-43: NO TITLE, PREPARED FOR ROTH BROS. SMELTING CORPORATION, SCALE: 1"=100', DATED: JULY 1993.

H & A OF NEW YORK

Geotechnical Engineers & Environmental Consultants

ROTH BROS. SMELTING CORPORATION
EAST SYRACUSE, NEW YORK

FINAL TOTAL AND TCLP LEAD EXCAVATION LIMITS

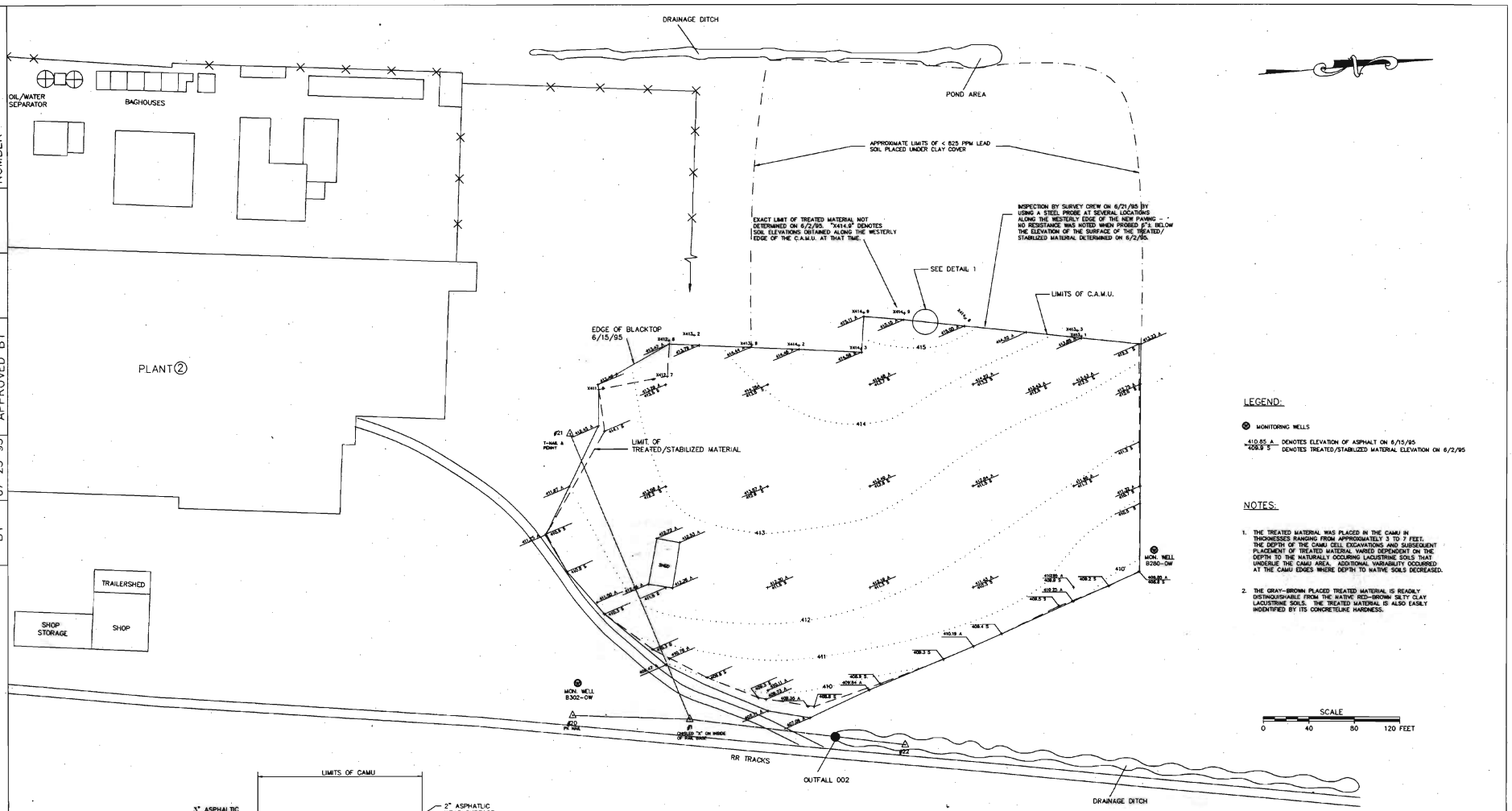
SCALE: 1 IN. = 100 FT. JULY 1995

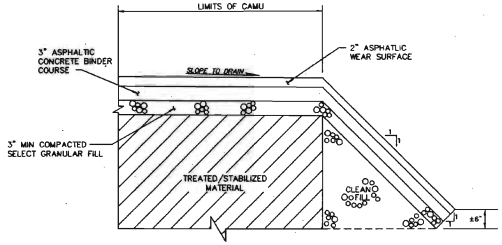
FILENAME: 70185-048-CDD002B.DWG

FIGURE 5

FILE No. 70185-048

DRAWN BY	E.G.W.	CHECKED BY		DRAWING NUMBER
	07-25-95	APPROVED BY		515599-E10





DETAIL 1
TYPICAL CAMU CROSS SECTION
SCALE 1"=1'-0"

REFERENCE
1) MAP OF NEW YORK, DWG NO. 7018-43 NO TITLE, PREPARED FOR ROTH BROS. SMELTING CORPORATION, SCALE 1"=100', DATED: JULY 1993
2) "AS-BUILT, CAMU AREA, ROTH BROS. SMELTING CORPORATION", TOWN OF DEWITT, ONONDAGA COUNTY, NEW YORK, PREPARED BY ALFRED M. IANUZZI, LAND SURVEYOR DATED: JUNE 22, 1995, REVISIONS: JUNE 29, 1995 SCALE: 1"=40', FILE NO. 2223.002

FIGURE 6 (REVISED)

ROTH BROS. SMELTING CORPORATION
EAST SYRACUSE, NEW YORK

TITLE
AS BUILT PLAN OF CAMU AND ASPHALT CAP

AOA IT INTERNATIONAL TECHNOLOGY CORPORATION

DESIGNED BY	J.G.	CHECKED BY			SHEET
DRAWN BY	E.G.W.	APPROVED BY			X
DATE	SEPT 28, 1995	DRAWING NO.	515599-E10		

FOIL207257

APPENDIX A
LABORATORY ANALYTICAL REPORTS

APPENDIX B
STATISTICAL ANALYSIS OF TREATED SOIL DATA

STATISTICAL EVALUATION
TREATED SOIL - 3 DAY CURE
ROTH BROS SMELTING

REFERENCE BATCH	LAB TCLP (PPM)	LN OF TCLP
S1-1	0.001	-6.907755
S1A-2	0.001	-6.907755
S1B-4	0.001	-6.907755
S1B-6	0.001	-6.907755
S1B-8	0.001	-6.907755
S2-1	0.001	-6.907755
S2-2	1.7	0.5306283
S3-2	1.2	0.1823216
S3-3	0.001	-6.907755
S3-5	0.001	-6.907755
S4-1	0.001	-6.907755
S4-3	0.001	-6.907755
S4-5	0.001	-6.907755
S5-1	5.3	1.6677068
S5-2	0.001	-6.907755
S5-4	0.001	-6.907755
S5-6	0.001	-6.907755
S6-1	0.33	-1.108663
S6-2	0.001	-6.907755
S7-1	1.2	0.1823216
S7-2	0.21	-1.560648
S8-2	2.1	0.7419373
S8-2	0.001	-6.907755
S8-4	0.001	-6.907755
S9-2	0.001	-6.907755
S9-3	0.001	-6.907755
S9-5	0.001	-6.907755
S9-7	0.13	-2.040221
S10-1	0.001	-6.907755
S10-2	0.02	-3.912023
S10-3	0.001	-6.907755
S11-1	0.001	-6.907755
S11-3	0.001	-6.907755
S11-3	0.001	-6.907755
S11-5	0.039	-3.244194
S12-1	0.001	-6.907755
S12-2	0.001	-6.907755
S12-4	0.001	-6.907755
S12-6	0.001	-6.907755
S13-1	0.001	-6.907755
S13-3	0.004	-5.521461
S13-5	0.001	-6.907755
S13-7	0.001	-6.907755
S14-2	0.001	-6.907755
S15-2	0.027	-3.611918
S15-4	0.032	-3.442019
S16-2	0.06	-2.813411
S16-4	0.018	-4.017384
S16-6	0.016	-4.135167
S17-1	1.00	0
S18-2	0.14	-1.966113
S18-4	0.13	-2.040221
S18-5	0.18	-1.714798
S19-2	0.12	-2.120264
S19-3	0.15	-1.69712
S20-3	0.003	-5.809143
S20-6	0.002	-6.214608
S21-11	0.16	-1.832581

REFERENCE BATCH	LAB TCLP (PPM)	LN OF TCLP
S21-2	0.003	-5.809143
S21-5	0.002	-6.214608
S21-7	0.18	-1.714798
S22-2	0.36	-1.021651
S22-5	0.34	-1.07881
S22-7	0.52	-0.653926
S23-2	0.16	-1.832581
S23-4	0.11	-2.207275
S23-6	0.23	-1.469678
S23-8	0.13	-2.040221
S24-1	0.001	-6.907755
S24-1	0.001	-6.907755
S24-2	0.16	-1.832581
S24-3	0.001	-6.907755
S24-3	0.001	-6.907755
S24-4	0.61	-0.494298
S24-5	0.27	-1.309333
S25-2	0.001	-6.907755
S25-4	0.001	-6.907755
S26-2	0.008	-4.828314
S26-4	0.001	-6.907755
S27-2	0.001	-6.907755
S27-4	0.001	-6.907755
S28-2	0.002	-6.214608
S29-2	0.071	-2.645075
S29-4	0.12	-2.120264
S29-6	0.053	-2.937463
S30-2	0.057	-2.864704
S30-4	0.05	-2.995732
S30-6	0.1	-2.302585
S31-2	0.001	-6.907755
S31-4	0.001	-6.907755
S31-6	0.001	-6.907755
S32-3	0.001	-6.907755
S32-6	0.001	-6.907755
S32-9	0.032	-3.442019
S33-2	0.001	-6.907755
S34-3	0.025	-3.688679
S34-6	0.008	-4.828314
S34-8	0.001	-6.907755
S35-3	0.001	-6.907755
S35-8	0.001	-6.907755
S36-11	1.35	0.3001046
S36-3	0.001	-6.907755
S36-6	0.001	-6.907755
S36-9	0.001	-6.907755
S37-3	0.001	-6.907755
S37-6	34	3.5263605
S37-8	0.47	-0.755023
S37-9	0.001	-6.907755
S38-3	0.001	-6.907755
S38-6	0.001	-6.907755
S38-9	0.001	-6.907755
S39-3	0.041	-3.194183
S39-6	0.006	-5.115996
S39-9	0.18	-1.714798
S40-2	0.008	-4.828314

REFERENCE BATCH	LAB TCLP (PPM)	LN OF TCLP
S41-3	0.005	-5.298317
S42-11	0.007	-4.961845
S42-3	0.014	-4.268698
S42-6	0.016	-4.135167
S42-9	0.007	-4.961845
S43-2	0.013	-4.342806
S43-4	0.1	-2.302585
S44-2	2.8	1.0296194
S44-2	4.2	1.4350845
S44-4	0.001	-6.907755
S44-6	0.001	-6.907755
S44-8	0.8	-0.223144
S45-3	0.041	-3.194183
S45-6	0.024	-3.729701
S45-9	0.058	-2.847312
S46-12	0.001	-6.907755
S46-3	0.001	-6.907755
S46-6	0.001	-6.907755
S46-9	0.001	-6.907755
S47-2	0.001	-6.907755
S47-4	0.001	-6.907755
S47-6	0.001	-6.907755
S47-6	0.001	-6.907755
S48-2	0.015	-4.199705
S48-4	0.007	-4.961845
S49-2	0.014	-4.268698
S49-4	0.005	-5.298317
S49-6	0.015	-4.199705
S50-2	0.001	-6.907755
S50-4	0.001	-6.907755
S51-1	0.059	-2.830218
S51-3	0.001	-6.907755
S51-5	0.022	-3.816713
S52-1	0.001	-6.907755
S53-2	0.007	-4.961845
S53-4	0.001	-6.907755
S53-8	0.001	-6.907755
S54-1	0.001	-6.907755
S54-3	0.001	-6.907755
S55-2	0.005	-5.298317
S55-4	1.28	0.2488601
S56-1	0.001	-6.907755
S56-3	0.01	-4.60517
S56-5	0.001	-6.907755
S57-11	0.026	-3.649659
S57-3	0.019	-3.963316
S57-6	0.079	-2.538307
S57-9	0.01	-4.60517
S58-3	0.001	-6.907755
S58-6	0.025	-3.688879
S58-8	0.006	-5.115996
S59-1	0.014	-4.268698
S59-3	0.006	-5.115996
S60-2	0.003	-5.809143
S60-4	0.021	-3.863233
S60-6	0.003	-5.809143

STATISTICAL EVALUATION
TREATED SOIL - 28 DAY CURE
ROTH BROS SMELTING

REFERENCE BATCH	LAB TCLP (PPM)	LN OF TCLP
COMP S1	0.001	-6.90776
COMP S2	1.2	0.182322
COMP S3	0.001	-6.90776
COMP S4	0.001	-6.90776
COMP S5	0.001	-6.90776
COMP S5	0.001	-6.90776
COMP S6	0.001	-6.90776
COMP S7	0.001	-6.90776
COMP S8	0.43	-0.84397
COMP S9	0.004	-5.52146
COMP S10	0.092	-2.38597
COMP S11	0.001	-6.90776
COMP S12	0.001	-6.90776
COMP S13	0.001	-6.90776
COMP S14	0.001	-6.90776
COMP S15	0.001	-6.90776
COMP S16	0.003	-5.80914
COMP S18	0.037	-3.29684
COMP S19	0.007	-4.96185
COMP S20	0.029	-3.54046
COMP S21	0.001	-6.90776
COMP S22	0.001	-6.90776
COMP S23	0.013	-4.34281
COMP S24	0.001	-6.90776
COMP S24	0.005	-5.29832
COMP S25	0.001	-6.90776
COMP S26	0.034	-3.38139
COMP S27	0.001	-6.90776
COMP S28	0.001	-6.90776
COMP S29	0.001	-6.90776

REFERENCE BATCH	LAB TCLP (PPM)	LN OF TCLP
COMP S30	0.001	-6.90776
COMP S31	0.001	-6.90776
COMP S32	0.008	-4.82831
COMP S33	0.022	-3.81671
COMP S34	0.055	-2.90042
COMP S35	0.008	-4.82831
COMP S36	0.001	-6.90776
COMP S37	0.13	-2.04022
COMP S38	0.016	-4.13517
COMP S39	0.001	-6.90776
COMP S41	0.001	-6.90776
COMP S42	0.49	-0.71335
COMP S43	0.24	-1.42712
COMP S44	0.17	-1.77196
COMP S45	0.14	-1.96611
COMP S46	0.025	-3.68888
COMP S47	0.001	-6.90776
COMP S48	0.001	-6.90776
COMP S49	0.001	-6.90776
COMP S50	0.001	-6.90776
COMP S51	0.13	-2.04022
COMP S53	0.001	-6.90776
COMP S54	0.023	-3.77226
COMP S55	0.001	-6.90776
COMP S56	0.001	-6.90776
COMP S57	0.001	-6.90776
COMP S58	0.001	-6.90776
COMP S59	0.001	-6.90776
COMP S60	0.001	-6.90776

STATISTICAL EVALUATION
TREATED SOIL
ROTH BROS SMELTING

3 DAY CURE RESULTS:

Mean of TCLP Results = 0.3727
Standard Deviation of TCLP = 2.65
Coefficient of Variation = 7.11
CONCLUSION: Data not normally distributed

Mean of ln(TCLP Results) = -4.778
Standard Deviation of ln(TCLP) = 2.497
Coefficient of Variation = 0.523
CONCLUSION: Data passes simple test for log normal distribution

Upper Tolerance Limit = $T_u = x + ks$
where: x = mean
k = constant*
s = standard deviation

IF T_U IS LESS THAN CLEAN-UP STANDARD THEN SITE MEETS STANDARD

T_u (3 day) = 0.0353 (k=1.927)
Ln (2.5 ppm) = 0.916

CONCLUSION: 3 DAY CURE DATA MEETS TREATMENT CRITERIA

28 DAY CURE RESULTS:

Mean of TCLP Results = 0.0567
Standard Deviation of TCLP = 0.176
Coefficient of Variation = 3.107
CONCLUSION: Data not normally distributed

Mean of ln(TCLP Results) = -5.405
Standard Deviation of ln(TCLP) = 2.082
Coefficient of Variation = 0.385
CONCLUSION: Data passes simple test for log normal distribution

T_u (28 day) = -1.104 (k=2.065)
Ln (2.5 ppm) = 0.916

CONCLUSION: 28 DAY CURE DATA MEETS TREATMENT CRITERIA

* - k obtained from Table A.4 of EPA document; Methods for Evaluating the Attainment of Cleanup Standards, Volume 1: Soils and Solid Media, PB89-234959.

APPENDIX C
DOCUMENTATION IN SUPPORT OF FIELD CHANGES

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York, 12233-7252
Fax (518) 485-8769

Langdon Marsh
Commissioner

December 16, 1994

Mr. Neal Schwartz
General Manager
Roth Brothers Smelting Corporation
6223 Thompson Road
PO Box 639
East Syracuse, NY 13057

Dear Mr. Schwartz:

Re: Temporary CMI Shutdown for the Winter

The proposed closure activities for the above referenced work listed in H & A's fax of December 8, 1994 have been reviewed and accepted by the Department with the understanding that the pile of oversized material left for the winter will be covered in plastic until work resumes next spring.

If you have any questions, please contact Mr. Paul Patel of my staff at (518) 457-9696.

Sincerely,

Steve J. Kaminski

Steve J. Kaminski
Supervisor
Hazardous Waste, Reg. 3 Section
Bureau of Eastern Haz. Waste Programs
Division of Haz. Substances Regulation

cc: S. Eidt, Reg. 7
C. Chernoff, Reg. 7
P. Masters, USEPA
R. Murphy

H&A of New York
Roth Bros Smelting
Corrective Measures Implementation

Field Change Order

Date: 11/22/94 Initiated By: Margaret Bonn

Nature of Change: Elimination of 30 x 30 ft excavation shown on Figure 3 at Outfall 003. Samples collected during RFI activities revealed that sediment in the manhole was contaminated (total lead - 4200 ppm) and the surrounding soils were clean (total lead - ND, TCLP lead 0.15). Figure 3 erroneously shows the area as targeted for excavation. Samples were obtained on 20 and 22 November 1994 from the manhole sediments one sample was ND and another was ~1000 ppm by XRF analysis. Sediment remaining in outfall amounts to between 5-10 gallons.

☒ Approve ☐ Disapprove

Reasons: Soils/Sediments will be removed from Outfall 003 manhole for treatment.
Removal of sediments only action required in 30 x 30 ft location.
Verbal approval received from NYSDEC on 11/22/94

Signatures: (as required)

Margaret Bonn — H&A Representative — 11/22/94 Date

NYSDEC Representative — Date

Roth Bros Representative — Date

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York, 12233-7...
Fax (518) 485-8769

Post-it™ brand fax transmittal memo 7671 | # of pages ▸ 2
To John MacLellan/M. Barry | From Paul Patel
Co. 315 433-9069 | Co. NYSDEC
Dept. ROTH | Phone # 518 457 7696
Fax # | Fax #

Langdon Marsh
Commissioner

December 14, 1994

Mr. Neal Schwartz
General Manager
Roth Brothers Smelting Corporation
6223 Thompson Road
PO Box 639
East Syracuse, NY 13057

Dear Mr. Schwartz:

Re: Lead Contaminated Oversized Material

A considerable quantity of material too large to be treated by being processed through the pugmill has been addressed by H & A in a letter dated December 12, 1994.

H & A proposes to treat this material by a combination of in-situ stabilization and encapsulation. The details of the proposal have been reviewed by this office and are acceptable on a pilot scale basis.

It is understood that only about half of the oversized material collected so far will be processed as described by H & A and placed in CAMU cell number 6. The results from this pilot test will be reviewed over the winter and the Department will have a decision on the suitability of this treatment before work resumes in the Spring of 1995.

If you have any questions regarding this matter, please contact Mr. Paul Patel at (518) 457-9696.

Sincerely,

Steve J. Kaminski

Steve J. Kaminski
Supervisor
Hazardous Waste, Reg. 3 Section
Bureau of Eastern Haz. Waste Programs
Division of Haz. Substances Regulation

cc: C. Chernove, Reg. 7
S. Eidt, Reg. 7
P. Masters, USEPA

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York, 12233-7252
Fax (518) 485-8769

Michael D. Zagata
Commissioner

Post-it™ brand fax transmittal memo 7671 | # of pages ▸

To M. Bonn	From Paul Patel
Co. H+A	Co. NYS DEC
Dept.	Phone # 518 457 9686
Fax # 716 232 6768	Fax #

May 3, 1995

Mr. Neal Schwartz
General Manager
Roth Brothers Smelting Corporation
6223 Thompson Road
P.O. Box 639
East Syracuse, NY 13057

Dear Mr. Schwartz:

Re: Cotton and Plastic Tarp and
Oversize Concrete Slabs

One of your consultants, Margaret Bonn of H&A, and Mr. Paul Patel have had several telephone conversations on some debris excavated last week during the soil stabilization project. It was agreed that:

1) The cotton and plastic tarp will have most of the contaminated soil shaken from them and then they will be buried in the disposal cells. This placement will occur in such a way that both sides of the fabric will be in contact with freshly poured concrete slurry (within reason and practicality). It is the Departments understanding that the total quantity of this material is less than twenty (20) cubic yards.

2) The pieces of concrete slabs that are too large for the hammermill (greater than fourteen (14) inches) may be cleaned by rinsing or brushing and placed in the disposal cells as long as recently poured concrete slurry is surrounding the slabs. It is our understanding that this material is also less than twenty (20) cubic yards.

If you have any questions, please contact Mr. Paul Patel at (518) 457-9696.

Sincerely,

Steve J. Kaminski

Steve J. Kaminski
Supervisor
Hazardous Waste, Reg. 3 Section
Bureau of Eastern Haz. Waste Programs
Division of Haz. Substances Regulation

cc: S. Eidt, Reg. 7
P. Masters, EPA Reg. 2

70185-046

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York, 12233-7252
Fax (518) 485-8769

Michael D. Zagata
Commissioner

Post-It™ brand fax transmittal memo 7671 | # of pages ▸

To M. Bonn	From Paul Patel
Co. H+A	Co. NYSDEC
Dept.	Phone # 518 457 9696
Fax # 716 232 6768	Fax #

April 6, 1995

Mr. Neal Schwartz
General Manager
Roth Brothers Smelting Corporation
6223 Thompson Road
P.O. Box 639
East Syracuse, NY 13057

Dear Mr. Schwartz:

Re: Backup CMI Plan - Letter of 3/1/95

Your consultant, H & A of New York, has proposed to continue to use the previously accepted CMI plan for your facility's remediation modified only by the use of a hammer mill on the excavated soil before it enters the pugmill to reduce problems with oversize materials. In the above referenced letter, H & A has submitted a series of changes to the current CMI that would be used only in the event of very wet weather that would make the pugmill impractical for mixing the soil.

The Department has reviewed these plans, and does not have any objection to the idea of using a mixing pad to process the contaminated soil. However, there are a few concerns that must be addressed before this backup plan can be accepted.

1) The diagram of the mixing pad must include details such as thickness and slop of the concrete walls,

2) the plan must be stamped by a New York State registered P.E., and

3) if necessary, the IT personnel list should be updated.

If you have any questions, please contact Mr. Paul Patel at (518) 457-9696.

Sincerely,

Steve J. Kaminski

Steve J. Kaminski
Supervisor
Hazardous Waste, Reg. 3 Section
Bureau of Eastern Haz. Waste Programs
Division of Haz. Substances Regulation

cc: R. Murphy
S. Eidt, Reg. 7
P. Masters, EPA Reg. 2

FOIL207272

New York State Department of Environmental Conservation
0 Wolf Road, Albany, New York, 12233-7252
ax (518) 485-8769

Michael D. Zagata
Commissioner

st-it™ brand fax transmittal memo 7671 | # of pages ▸

To M. Bonn	From Paul Patel
H+A	Co. NYS DEC
Dept.	Phone # 315 457 9696
Fax # 716 232 6768	Fax ▸

May 30, 1995

Mr. Neal Schwartz
Roth Brothers Smelting Corporation
6223 Thompson Road
PO Box 639
East Syracuse, NY 13057

Dear Mr. Schwartz:

Re: Revised Letter of 6/26/95
CAMU Cover

In a telephone conversation on 6/26/95, Mr. Paul Patel and Mr. Victor Valaitis of my staff discussed changes to the CAMU Cover with your consultant, Mr. Stanley Walker, P.E. of H & A.

The ability of the asphalt cover to withstand lateral loads was raised. Specifically, there was a concern that large trucks making turns on this surface could quickly damage the new cover. Mr. Stanley Walker responded with revised letter dated 5/26/95 and supporting calculations dated 5/30/94, addressing this concern.

The cover design is considered acceptable with the Department's understanding that H & A has determined that the CAMU cover described in the letter of 6/26/95 will be sufficient for its intended use as a cover, and parking and storage area for large tractor trailers. If the Department's understanding is incorrect, please have H & A contact my staff immediately.

If you have any questions concerning this matter, please contact Mr. Paul Patel at (518) 457-9696.

Sincerely,

Steve J. Kaminski

Steve J. Kaminski
Supervisor
Hazardous Waste, Reg. 3 Section
Bureau of Eastern Haz. Waste Programs
Division of Haz. Substances Regulation

cc: S. Eidt, Reg. 7
P. Masters, USEPA
P. Patel
V. Valaitis

parratt wolff inc

June 1, 1995

Mr. John Manchella
Roth Brothers Smelting Corp.
6223 Thompson Road East
Syracuse, New York 13206

Re: L-95073
Laboratory Testing
PO #6458

Dear Mr. Manchella:

Enclosed are the results of laboratory testing performed at your request on a bulk soil sample obtained by a technician of Parratt-Wolff, Inc. on May 25, 1995 for the above referenced project. Results include:

1.	Natural Moisture Content ASTM D2216	1 each
2.	Sieve Analysis ASTM D422 & D1140	1 each
3.	Hydrometer Analysis ASTM D422	1 each
4.	Atterberg Limits ASTM D4318	1 each
5.	Hydraulic Conductivity - Flexible Wall ASTM D5084	1 each

All requested tests have been completed on the previously received sample(s) for the above project. All sample remains are scheduled to be disposed of on July 1, 1995. Please notify Parratt-Wolff, Inc. by letter or telephone prior to July 1, 1995 if you would prefer to pick up the sample(s) or that the sample(s) be retained by Parratt-Wolff, Inc. for an additional period of time.

Thank you for this opportunity to work with you.

Very truly yours,

PARRATT - WOLFF, INC.

David L Elliott

David L. Elliott, ET
Assistant Laboratory Manager
DLE/lms
encs:

☑ Fisher Road, East Syracuse NY 13057-0056 Telephone 315-437-1429 or 800-782-7260 FAX 315-437-1770
☐ One Copley Parkway, Suite 309, Raleigh, North Carolina 27623 Telephone 919-469-2953 FAX 919-469-8280

SIEVE ANALYSIS OF SOIL/AGGREGATE

perrone wolff inc

PROJECT TITLE Laboratory Testing

PROJECT # L-95073
TEST METHOD ASTM D422 & D1140

REPORT # 1
REPORT DATE June 1, 1995

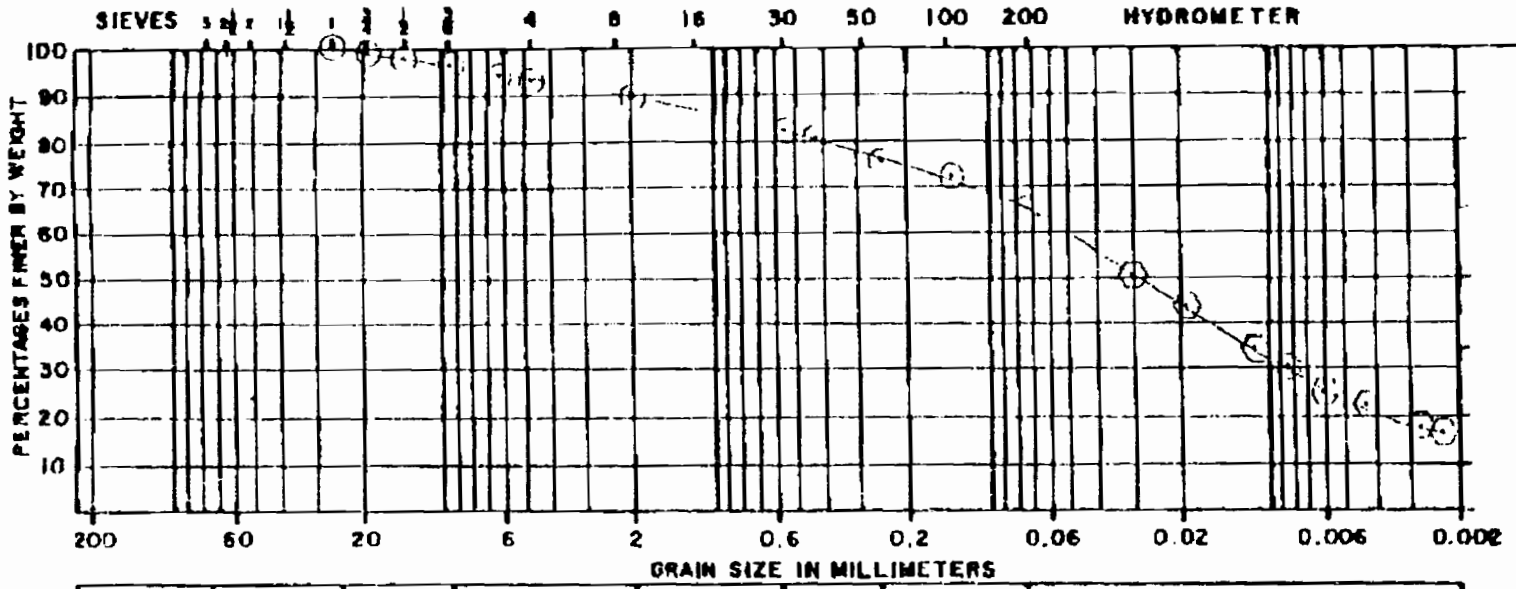
		Sieve Size - Percent Passing Sieve																	
Lab ID#	Sample				1"	3/4"	1/2"	3/8"	1/4"	#4	#10	#30	#40	#60	#100	#200			
6978	Clay - Alpha Pit Jamesville, New York				100	99.2	98.6	97.2	95.1	93.5	89.4	82.0	80.1	76.2	71.6	65.5			

Sample mass, as received, meets minimum requirements of test method: Yes X No ____ Prewashed: Yes X No ____

Remarks: ____

Performed By SS,BSW
Checked By VJT

GRAIN SIZE ANALYSIS



BOULDERS COBBLES	GRAVEL C	GRAVEL M	GRAVEL F	SAND C	SAND M	SAND F	SILT-CLAY SOIL

228	76.2	25.4	9.52	2.0	0.59	0.25	0.074	MM.	OPENING
9 in.	3 in.	1 in.	3/8 in.	No. 10	30	60	200		SIEVE

L-95073 Lab ID #: 6978

Laboratory Testing Sample #: Clay - Alpha Pit
Jamesville, New York

⊙ Sieve Analysis ASTM D422 & D1140

⊙ Hydrometer Analysis ASTM D422

parratt wolff inc
FISHER RD. EAST SYRACUSE N.Y. 13057
TELEPHONE AREA CODE 315/437 1429

JOB NO. L-95073
REPORT NO. 1
June 1, 1995

June 1, 1995

L-95073
Laboratory Testing

Atterberg Limits ASTM D4318 and
Natural Moisture Content ASTM D2216

Lab ID#	Sample	Plastic Limit	Liquid Limit	Plasticity Index	Moisture Content as a Percent of Dry Weight
6978	Clay-Alpha Pit Jamesville, NY	11	19	8	11.9

Report Date: June 1, 1995

Test Start Date May 25, 1995

Measurement of Hydraulic Conductivity
of Saturated Porous Materials
Using a Flexible Wall Permeameter
ASTM D5084

Project No: L-95073 Project Title: Laboratory Testing

ST No: -- / Lab ID#: 6978 / Test Sample Location: Clay - Alpha Pit, Jamesville

Depth/Lift/Elev.: -- / Type of Sample: Undisturbed -- Remolded X

Method of Compaction: 3 Layers 15 Blows per Layer(1) / Percent Compaction: --

Dry Unit Weight (PCF): Maximum: -- Initial: 128.0 / Moisture Content (% of Dry Weight): Optimum: -- Initial: 11.9

Initial Height (cm): 11.60 / Initial Diameter (cm): 10.10 / Initial Gradient: 30.3

Initial Degree of Saturation (B Value)(%): 90 / Permeant Liquid Used: Deaired Deionized Water

Confining Pressure (PSI): 71.0 / Test (head) Pressure (PSI): 68.0 / Tail (back) Pressure (PSI): 63.0

Final Degree Of Saturation (B Value)(%): 98 / Final Dry Unit Weight (PCF): 135.6 / Final Gradient: 31.4

Final Height (cm): 11.20 / Final Diameter (cm): 10.05 / Final Moisture Content (% of Dry Weight): 11.0

Final Four Determinations k (cm/sec)

1.05×10^{-8}	1.05×10^{-8}	1.05×10^{-8}	1.05×10^{-8}

Mean Value of Final Four Consecutive Determinations:

Coefficient of Permeability k (cm/sec): 1.05×10^{-8}

Project Specifications: --

Notes: (1)At Engineer's request.

SIEVE ANALYSIS OF SOIL/AGGREGATE

PROJECT TITLE Laboratory Testing

PROJECT # L-95073

TEST METHOD ASTM D422 & D1140

REPORT # 1

REPORT DATE June 1, 1995

		Sieve Size - Percent Passing Sieve																	
Lab ID#	Sample				1"	3/4"	1/2"	3/8"	1/4"	#4	#10	#30	#40	#60	#100	#200			
6978	Clay - Alpha Pit Jamesville, New York				100	99.2	98.6	97.2	95.1	93.5	89.4	82.0	80.1	76.2	71.6	65.5			

Sample mass, as received, meets minimum requirements of test method: Yes X No

Prewashed: Yes X No

Remarks:

Performed By SS,BSW

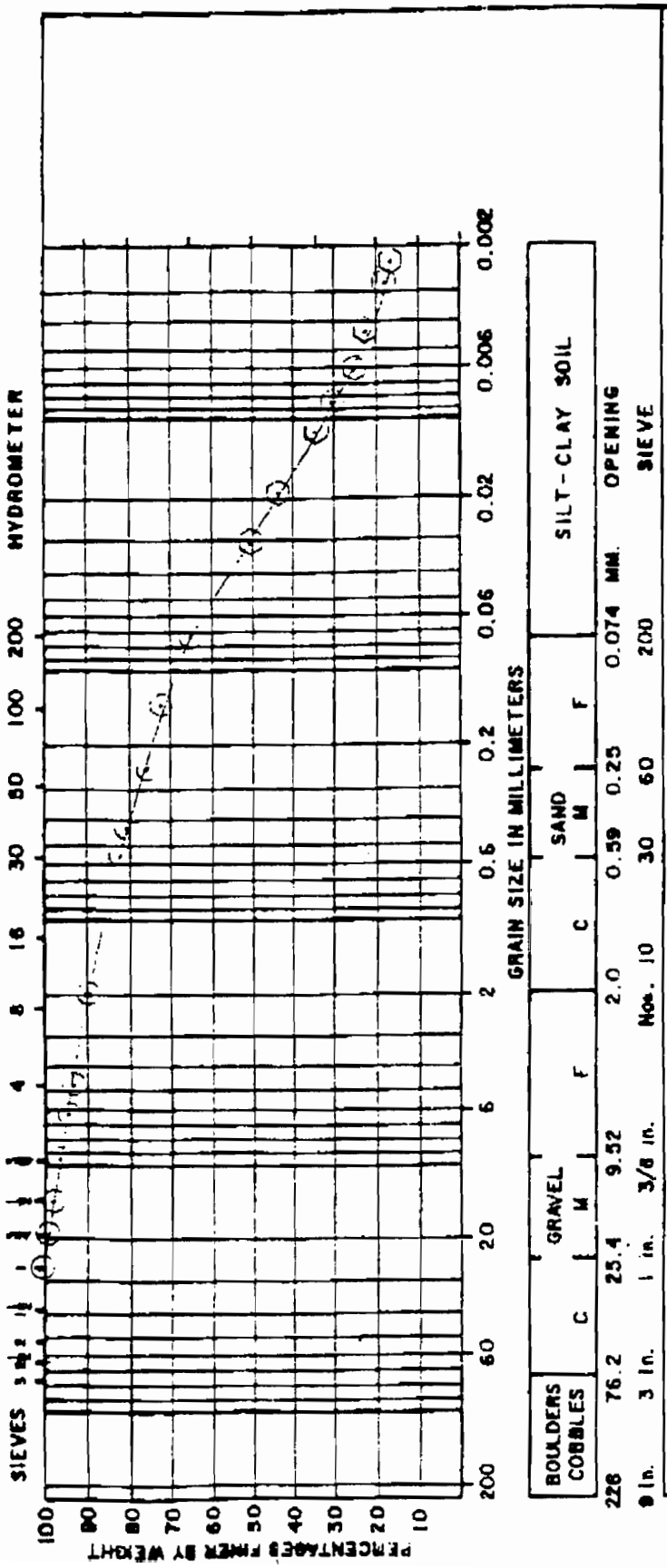
Checked By VJT

FOIL207280

parratt wolff inc
FISHER RD., EAST SYRACUSE N.Y. 13057
TELEPHONE AREA CODE 315/437 1429

JOB NO. L-95073
REPORT NO. 1
June 1, 1995

GRAIN SIZE ANALYSIS



Lab ID #: 6978

Sample #: Clay - Alpha Pit
Jamesville, New York

⊙ Sieve Analysis ASTM D422 & D1140

⊙ Hydrometer Analysis ASTM D422

June 1, 1995

L-95073
Laboratory Testing

Atterberg Limits ASTM D4318 and
Natural Moisture Content ASTM D2216

Lab ID#	Sample	Plastic Limit	Liquid Limit	Plasticity Index	Moisture Content as a Percent of Dry Weight
6978	Clay-Alpha Pit Jamesville, NY	11	19	8	11.9