Soil Sampling Program
Phase 3 Report
Cerro Conduit Company

Submitted to:

New York State
Department of Environmental Conservation
SUNY, Building 40
Stony Brook, NY 11794

March 1989

Prepared by:

Avendt Group, Inc.
1906 Forest Drive
Annapolis, MD 21401

March 1989

SOIL SAMPLING PROGRAM REPORT
PHASE 3
CERRO CONDUIT COMPANY

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SECTION 1.0
INTRODUCTION

1.1 Purpose

The Phase 3 Soil Sampling Report for the former Cerro Conduit Company facility, located in Syosset, Nassau County, New York, has been prepared in response to a New York State Department of Environmental Conservation (NYSDEC) memorandum, dated June 22, 1988, which called for additional soil sampling at the facility. This sampling was requested to provide additional information on the extent of copper and cyanide concentrations in the soils in Basins 1, 2 and 3 and around sampling point B109. These areas selected for additional investigation were identified as areas of concern based on analytical results generated as part of the Phase 2 Soil Sampling Program.

1.2 Background Information

Cerro Conduit Company formerly operated a copper wire drawing and electrical conduit plating facility at Robbins Lane and Miller Place in Syosset, Nassau County, New York. The facility ceased operation in 1986 and at that time, a negotiated Consent Order between Cerro and the NYSDEC was signed. The Consent Order stated that a building decommissioning program and a soil sampling program be developed and implemented. The building was decommissioned according the U.S. Environmental Protection Agency (USEPA) and NYSDEC regulations and guidelines. A letter certifying the acceptance of the building decommissioning program was received from NYSDEC dated June 6, 1988 (See Appendix A, Pertinent Correspondence).

To comply with the Consent Order requesting the soil sampling, a Phase 1 Soil Sampling Program was developed and implemented on March 12 through 14 and 19 and 20, 1987, to identify potential soil contamination throughout the 40-acre site. Phase 1 sampling consisted of collecting shallow soil samples on a 100-foot grid system throughout the property and deep soil samples near to structures on-site that may have had the potential to contribute concentrations of contaminants of concern to on-site soils. Results of the Phase 1 sampling effort were reported to the NYSDEC in July 1987. Based on the NYSDEC review of the Phase 1 Soil Sampling Program Report, the NYSDEC requested additional duplicate soil sampling at 16 locations sampled previously during Phase 1 and five samples to be collected in the three dry basins. Phase 2 soil sampling was performed on December 8 and 9, 1987. A Phase 2 Soil Sampling Program Report was prepared and submitted to NYSDEC in April of 1988.

On June 22, 1988, the Avendt Group received a letter from NYSDEC requesting that additional samples be collected in the area of boring B109 and the three dry basins. On July 25, 1988, the Avendt Group sent a letter to NYSDEC proposing to collect samples on a uniform grid pattern in the three dry basins and to excavate underground piping in the area of B109. The purpose of the underground line excavation near B109 was to determine if the underground piping had broken, thus releasing material that could have caused the detection elevated levels of copper identified during the Phase 2 investigation. During August 31 to September 2, the Avendt Group performed excavation of the underground line that began near to the Copper Filter House and ended at the manhole near Clarifier D. The excavation of the pipe indicated that a very small crack in the pipe had occurred. Since the crack was observed, the Avendt Group submitted another proposal to NYSDEC on November 8, 1988, to collect soil samples around boring B109 and in each of the three dry basins. On November 14 through 17, 1988, the Avendt Group again collected samples around B109 and in each of the three dry basins.

The laboratory data was received by the Avendt Group from Hittman-Ebasco Associates, Inc. (a **USEPA** Contract Laboratory) on February 8, 1989. This Phase 3 Soil Sampling Program Report presents the analytical data from the Phase 3 sampling event.

Phase 1 soil sampling consisted of collecting 74 shallow soil samples (18" to 24") throughout the property and 16 deep borings (25') around in-ground process equipment, namely the copper pond and three clarifiers. Samples were analyzed for ten metals and cyanide, using the EP toxicity method identified in 40 CFR Part 261. Analytical parameters were selected by NYSDEC. The ten metals selected include: Arsenic, Barium, Cadmium, Chromium (total), Copper, Iron, Lead, Selenium, Silver and Zinc.

Phase 2 soil sampling consisted of collecting 13 soil samples at uniform grid locations previously sampled during Phase 1 at either a three-foot or six-foot depth. Three other samples were collected at locations of deep soil borings previously sampled during Phase 1. Samples were analyzed for the ten metals using the EP Toxicity method and for ten total metals and total cyanide. Additionally, 5 borings were undertaken and samples collected from the three dry basins on-site: two in Basin 1, two in Basin 2 and one in Basin 3. A total of 21 samples were collected during Phase 2. All sample locations and depths were selected by the NYSDEC in their letter dated September 15, 1987. Samples were analyzed for the ten above-referenced metals using the EP Toxicity method and for ten total metals and total cyanide.

Phase 3 soil sampling consisted of collecting four deep soil samples at right angles around the original placement of the boring B109. An intensive basin sampling effort was also performed in each of the three dry basins on-site. Five sample locations were chosen in Basin 1, seven in Basin 2 and four in Basin 3. Two samples were collected from each soil boring location within the three basins at 3-and 6-foot depths. A total of 32 samples were collected from the three basins; samples were analyzed for total copper and total cyanide and for copper using the EP Toxicity method. Cyanide was not analyzed for using the EP Toxicity method since this technique is inappropriate for quantification of this contaminant. The four samples collected from around B109 were taken at the 25-foot depth and analyzed for total copper and total cyanide and copper using the EP Toxicity method.

1.3 Sample Collection

The locations of the Phase 3 borings in the basins were selected by setting up a 50-foot rectangular grid in the bottom of the basins and boring at the grid line intersections. The bottoms of the basins were surveyed to locate the boring locations and the locations were marked with stakes. The level area in the bottom of the basins restricted the number of boring locations to five in Basin 1, seven in Basin 2 and four in Basin 3. Samples were taken at each boring location at 3 feet and 6 feet below the grade that existed prior to the earthwork that was performed to allow access to the bottom of the basins. The sampling process was to bore to the desired depth using a drill rig and hollow stem augers. A split spoon sampler was lowered through the auger stem to the bottom of the boring, then driven down two feet to collect the sample. The sample collection and handling protocol used have been described in the Phase 1 and 2 Soil Sampling Program Reports and is included in this report as Appendix B, Sample Collection Procedures.

Erosion of the sides and access ramps of the basins had made the basins inaccessible to the drill rig. A bulldozer was brought in to regrade the ramps to permit access to the basins. The regrading altered the surface elevation in the north end of Basin 1. Therefore, the sampling depth in the areas where the fill had been placed was modified to allow for the fill material. Table 1, Basin Sample Collection Depths, lists the depth below final grade for the basin samples, the depth of fill and the depth below the original grade.

In addition, Table 1 has the elevations of the original bottom of the basins at the sample locations. Elevations are relative to datum points selected in each basin. Datum locations are included in Table 1.

Table 1

BASIN SAMPLE COLLECTIONS DEPTHS

Date	Sample #	Depth (ft)	Depth of fill (ft)	*Elevation: Datum to Original Grade (ft)	Depth Below Original Grade (ft)
11/16/88	C101-09	-9			-3
11/16/88	C101-12	-12	6	3.0	-6
11/16/88	C102-07	-7			-3
11/16/88	C102-10	-10	4	-4.0	-6
11/16/88	C103-03	-3			-3
11/16/88	C103-06	-6	0	-3.8	-6
11/16/88	C104-09	-9			-3
11/16/88	C014-12	-12	6	-5.2	-6
11/16/88	C105-09	-9			-3
11/16/88	C105-12	-12	6	-8.4	-6
11/16/88	C201-3	-3			-3
11/16/88	C201-6	-6	0	-7.7	-6
11/16/88	C202-3	-3			-3
11/16/88	C202-6	-6	0	-16.2	-6
11/16/88	C203-3	-3			-3
11/16/88	C203-6	-6	0	-13.7	-6
11/16/88	C204-3	-3			-3
11/16/88	C204-6	-6	0	-8.8	-6
11/16/88	C205-3	-3			-3
11/16/88	C205-6	-6	0	-8.6	-6
11/16/88	C206-3	-3			-3
11/16/88	C206-6	-6	0	-26.1	-6
11/16/88	C207-3	-3			-3
11/16/88	C207-6	-6	0	-25.5	-6
11/15/88	C301-3	-3			-3
11/15/88	C301-6	-6	0	-6.8	-6
11/15/88	C302-3	-3			-3
11/15/88	C302-6	-6	0	-5.1	-6
11/15/88	C303-3	-3			-3
11/15/88	C303-6	-6	0	-7.9	-6
11/15/88	C304-3	-3			-3
11/15/88	C304-6	-6	0	-5.1	-6

* Basin 1 - Datum is upper end of southeast outfall structure wing.
Basin 2 - Datum is iron bolt in the southwest corner of the outfall structure.
Basin 3 - Datum is top of the end of outfall pipe.

Four additional samples were collected in the vicinity of sample location B109. The location of these borings is shown in Figure 1, Phase 3 Soil Sampling Program - Sample Locations. The four new borings were located 12.5 feet from B109, positioned so that they formed the corners of a rectangle sized at 20 feet by 15 feet. The borings were made by hollow stem auger to a depth of 25 feet. A split spoon sampler was used to collect the samples from 25 feet to 27 feet. The borings and sampling were done on November 15, 1988. The sample collection and handling protocol used are described in Appendix B.

A chain-of-custody form was completed for the samples as they were collected. The samples were kept on ice until they were delivered to the lab. All samples were held by Avendt Group personnel until the Phase 3 sample collection was completed. At the conclusion of this sample collection, Avendt Group personnel transported the samples to Hittman-Ebasco Laboratories, Inc., in Columbia, Maryland, a laboratory participating in the USEPA Contract Laboratory Program (CLP). The samples were analyzed for total copper and total cyanide and copper using the EP Toxicity method according to USEPA Contract Laboratory Protocol.

On November 16, 1988, Mr. Raymond J. Zeltman, NYSDEC, came to the site to observe sampling procedures. Mr. Zeltman observed the collection of samples in Basin 1. He also obtained splits of the following samples: B109B; C102 (3 and 6 ft); C203 (3 and 6 ft); and C304 (3 and 6 ft) for analysis by the NYSDEC for validation of Avendt Group results.

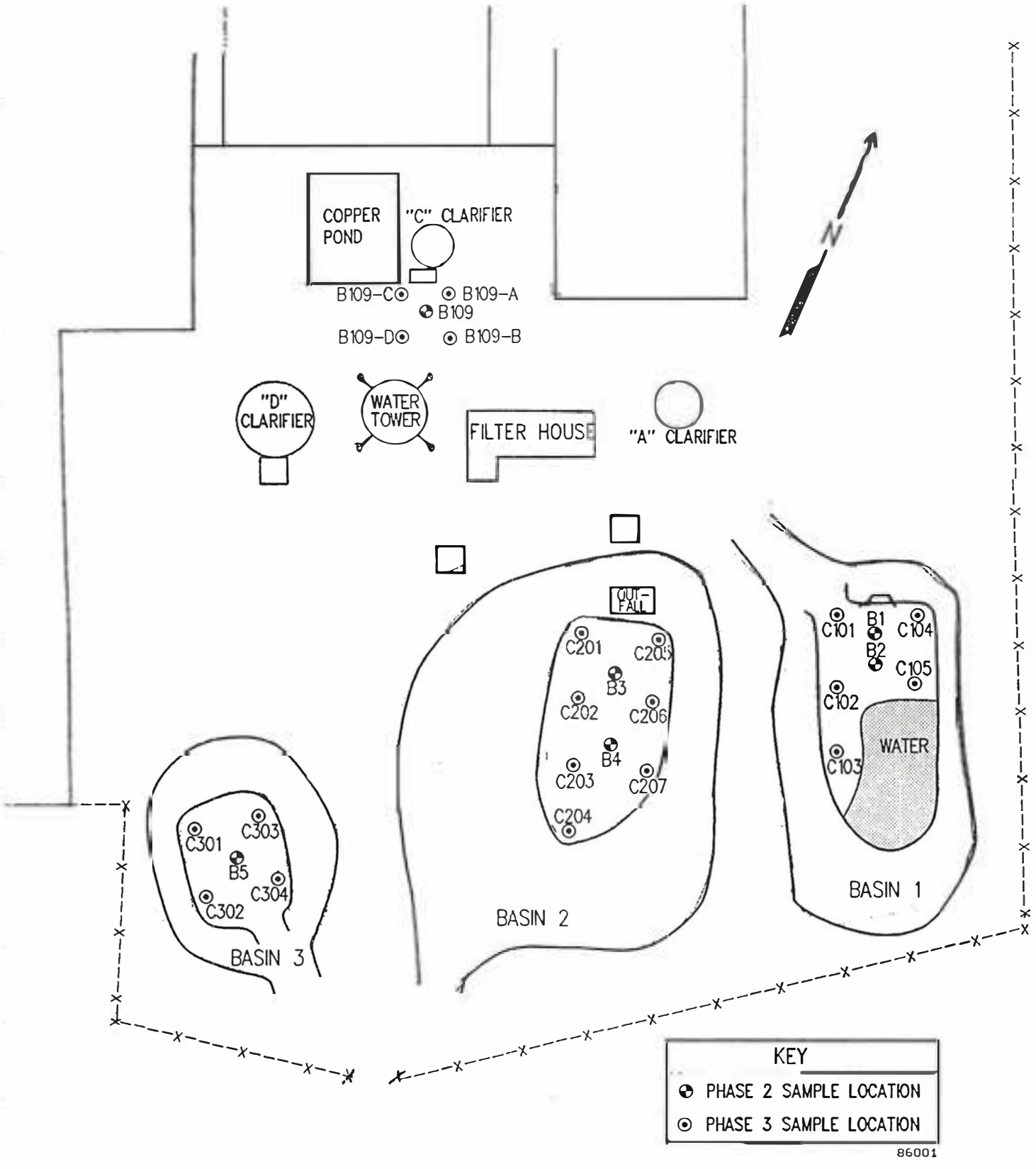

Figure 1. Phase 3 Soil Sampling Program – Sample Locations

SECTION 2.0
SAMPLING RESULTS

2.1 Results of Sampling Near B109

During the Phase 1 soil sampling event, deep soil samples were collected around the copper pond and the three in ground clarifiers to determine the impact of the structures on nearby soils. Deep borings were collected at four points surrounding each of the four in-ground structures at depths of 25 feet. The collection depth was calculated as five-feet below the bottom slab upon which the structure rests. Phase 1 analytical results for copper using the EP Toxicity method showed 0.63 milligrams per liter (mg/l) in the simulated leachate. The NYSDEC selected this sampling point as a location where additional data was requested. During Phase 2, another sample was collected in this location at the 25-foot depth to further assess the impact to soils in this area. Phase 2 data revealed that the copper level identified using the EP Toxicity method was less than 0.50 mg/l of copper. Total copper was also analyzed using the acid digestion technique that identified an isolated sample (B109) with a total copper level of 2200 ppm. Due to this quantity of total copper identified in this sample, the NYSDEC requested that sampling be performed to delineate the horizontal dispersion of this compound.

During Phase 3, four sample locations were selected at right angles approximately 12.5 feet from the original location of B109. The locations were identified as follows:

B109A - northeast of B109
B109B - southeast of B109
B109C - northwest of B109
B109D - southwest of B109

As presented on Table 2, Tank Soil Sampling Results, B109, total copper results range from 2.9 ppm (low) to 22 ppm (high). The low value of 2.9 ppm was identified at B109D while the highest value of 22 ppm was identified at B109B. None of the total copper values exhibited a value near to the previously identified Phase 2 total copper level at B109 of 2200 ppm. A possible explanation of the Phase 2 total copper value of 2200 ppm is that underground piping in the area of B109 had exhibited a small crack with evidence of some minor leaking identified during the pipe excavation described in Section 1.2, Background Information. The possibility exists that some of the material emanating from the crack was picked up during the Phase 2 sampling event and contributed to the quantity (2200 ppm) of total copper discovered. There is no evidence from the Phase 3 sampling event data that significant quantities of copper have migrated to the 25-foot depth or horizontally therefrom. This theory

TABLE 2

TANK SOIL SAMPLING RESULTS, B 109

Location	PHASE 1 March 1987 EP Toxicity Copper mg/l	PHASE 2 December 1987 EP Toxicity Copper mg/l	PHASE 2 December 1987 TOTAL Copper (ppm)	PHASE 2 December 1987 TOTAL Cyanide (ppm)	PHASE 3 December 1988 EP Toxicity Copper mg/l	PHASE 3 December 1988 TOTAL Copper (ppm)	PHASE 3 December 1988 TOTAL Cyanide (ppm)
B109	0.63 NE	<0.50	2200	0.60	ND	ND	ND
B109A	ND	ND	ND	ND	.038	21.0	<1.0
B109B	ND	ND	ND	ND	.034	22.0	<1.0
B109C	ND	ND	ND	ND	.406	12.0	<1.0
B109D	ND	ND	ND	ND	<.017	2.9U	<1.0

N - Indicates spike sample recovery not within control limits
E - Indicates an estimated value due to interference
U - Below the detection limit
ND - Not done

is supported by the trace levels of copper identified using the EP Toxicity method. Very low levels of copper were identified from samples B109 A, B, C and D using this method. Copper was not identified in sufficient quantities in the horizontal plane near to B109 to warrant further investigation as the levels do not demonstrate that the in-ground structures have leaked.

Cyanide concentrations from the four sampling points nearby B109 were all below detection limits (<1.0 ppm). Since this contaminant was not identified in significant quantities, further investigation of this contaminant around B109 is not warranted.

Based on this information, it is evident that in-ground structures have not leaked and have not contributed significant quantities of copper or cyanide to nearby on-site soils.

2.2 Basin Sampling Results

Soil sampling in the three dry basins on-site was requested by the NYSDEC in their letter of September 15, 1987 (see Appendix A, Pertinent Correspondence). During Phase 2, samples were collected in the following locations:

Phase 2 Sample Designation	Phase 2 Sample Location
Basin 1	Basin No. 1, center of north half
Basin 2	Basin No. 1, center of south half
Basin 3	Basin No. 2, center of north half
Basin 4	Basin No. 2, center of south half
Basin 5	Basin No. 3, center of basin

Figure 1 identifies the three basins; Basin 1 is on the east side, along the facility fenceline; Basin 2 is in the middle of the two adjacent basins; and Basin 3 is the westernmost basin. Both Phase 2 and Phase 3 sample locations are identified on Figure 1.

During Phase 3, sample locations were selected on the bottom of each of the three basins according to a uniform grid pattern with 50-foot centers Samples were collected at both 3-and 6-foot depths below the bottom elevation of the basins. Significant earthwork was required to be performed in Basin 1 before the drill rig could access the bottom of the basin. Therefore, drilling depths were adjusted to accommodate for the grade changes within Basin 1.

Analytical data resulting from the Phase 3 sampling event are presented in Table 3.

TABLE 3
BASIN SOIL SAMPLING RESULTS

PHASE 2 BASIN SAMPLES

Location	Sample No.	Collection Depth (ft)	EP Toxicity (mg/l) Copper	Total Copper (ppm)	Total Cyanide (ppm)
Basin 1	Basin 1	6	0.02 @	290.00	17.00
	Basin 2	6	<0.50	260.00	6.00
Basin 2	Basin 3	6	<0.50	230.00	4.60
	Basin 4	6	<0.50	80.00	0.97
Basin 3	Basin 5	6	0.02 @	110.00	2.30

@ - Indicates level reported is approximate, detected below practical quantification limits.

PHASE 3 BASIN SAMPLES

Location	Sample No.	Collection Depth (ft)	EP Toxicity (mg/l)	Total Copper (ppm)	Total Cyanide (ppm)
Basin 1	C101	3	.595	99	11.0
	C101	6	1.110	108	15.0
	C102	3	4.190	504	22.0
	C102	6	1.460	183	21.0
	C103	3	7.700	1040	47.0
	C103	6	4.790	500	10.0
	C104	3	1.940	316	4.5
	C104	6	4.840	317	9.0
	C105	3	7.070	570	25.0
	C105	6	4.740	319	8.6
Basin 2	C201	3	0.431	108	<1.0
	C201	6	0.639	124	<1.0
	C202	3	25.900	2290	96.0
	C202	6	2.460	397	6.4
	C203	3	1.680	317	2.1
	C203	6	2.210	259	5.7
	C204	3	0.671	106	1.9
	C204	6	0.899	171	1.7
	C205	3	4.370	417	16.0
	C205	6	3.650	217	8.9

PHASE 2 BASIN SAMPLES

Location	Sample No.	Collection Depth (ft)	EP Toxicity Copper (mg/l)	Total Copper (ppm)	Total Cyanide (ppm)
	C206	3	3.410	320	8.8
	C206	6	2.010	235	5.1
	C207	3	1.490	213	5.8
	C207	6	0.650	112	3.6
Basin 3	C301	3	17.300	2070	44.0
	C301	6	10.500	1900	15.0
	C302	3	1.660	39	1.3
	C302	6	1.200	32	<1.0
	C303	3	1.050	1210	1.7
	C303	6	2.260	299	1.0
	C304	3	0.880	15	<1.0
	C304	6	0.999	5.7	<1.0

Average concentrations of total copper, EP Toxicity method copper and cyanide were calculated for each of the three basins and are presented below:

Basin 1	506 ppm total copper at the 3-ft depth
	285 ppm total copper at the 6-ft depth
Basin 2	538 ppm total copper at the 3-ft depth
	216 ppm total copper at the 6-ft depth
Basin 3	834 ppm total copper at the 3-ft depth
	559 ppm total copper at the 6-ft depth
Basin 1	4.299 mg/l extractable copper at the 3-ft depth
	3.388 mg/l extractable copper at the 6-ft depth
Basin 2	5.421 mg/l extractable copper at the 3-ft depth
	1.788 mg/l extractable copper at the 6-ft depth
Basin 3	5.223 mg/l extractable copper at the 3-ft depth
	3.740 mg/l extractable copper at the 6-ft depth
Basin 1	21.9 ppm total cyanide at the 3-ft depth
	12.7 ppm total cyanide at the 6-ft depth
Basin 2	18.8 ppm total cyanide at the 3-ft depth
	4.6 ppm total cyanide at the 6-ft depth
Basin 3	12.0 ppm total cyanide at the 3-ft depth
	4.5 ppm total cyanide at the 6-ft depth

Evaluation of the above data indicates that each of the three contaminants decrease in concentration with depth. This situation is anticipated due to the contaminants being insoluble particles which are being trapped by the sand at the bottom of each of the three basins. The basins, in effect, are acting as filters to contain these contaminants. The EP Toxicity method data for copper demonstrate the insolubility of the copper which is effectively being retained within the shallow depths of each of the basin floors.

In the absence of New York State regulatory standards for total copper and total cyanide in soil and due to the extremely low levels of extractable copper observed, no remediation at the site is proposed, subject to regulatory approval. Continued monitoring of the upper glacial aquifer beneath the site has not shown elevated concentrations of copper or cyanide (as identified in the Phase II Investigation, Cerro Conduit, prepared by H2M Group for the Sy Associates, dated February 1989). Therefore, the apparent risk from these contaminants should be considered to be negligible.

APPENDIX A
PERTINENT CORRESPONDENCE

APPENDIX B
SAMPLE COLLECTION PROCEDURES

New York State Department of Environmental Conservation

MEMORANDUM

TO: Rocky Piaggione
FROM: Anthony Candela
SUBJECT: CERRO CONDUIT - SOIL SAMPLING REPORT (AVENDT GROUP)

DATE: September 15, 1987

SEP 17 '87

We have reviewed the "Soil Sampling Program Report" for Cerra Conduit Company and have the following comments:

1. The soil sampling results were obtained using the extraction method rather than total digestion which gives total metal concentration (DEC protcol is for total metals).

2. Some duplicate sampling results in the "Analytical Data Report Package" were omitted from Table 2 - Soil Sampling Program results, in particular, Sample No. A-023 which indicated lead to be 240 ppm.

3. Aerial photos showing the soil sampling grid laycut shows 5 soil borings by SY Associates. The site protocol between NYSDEC and Sy Associates only requires the installation of 4 wells. (Therefore, it will be necessary for the Avendt Group to do these 5 soil borings.)

SUMMARY

Recommend resampling of 16 points plus the 5 locations that were indicated for SY Associates.

Resampling (Ref. Figure I)

Location	Depth	Location	Depth
A-016	3 ft.	A-057	6 ft.
A-019	6 "	A-061	6 "
A-021	3 "	A-064	6 "
A-023	6 "	A-067	3 "
A-029	3 "	A-071	6 "
A-031	6 "	A-075	3 "
A-054	3 "	B-101	5 " below
		B-109	5 " structure
		B-113	5 " " "

1

New Points (See Fig. I)

Basin No. 1 - 2 borings @ 6 ft.
Basin No. 2 - 2 borings @ 6 ft.
Basin No. 3 - 1 boring @ 6 ft.

Anthony Candela
Senior Sanitary Engineer

AC:cp

RJA ✓
PFG

New York State Department of Environmental Conservation
Building 40—SUNY, Stony Brook, New York 11794
(516) 751-7900

Thomas C. Jorling
Commissioner

June 6, 1988

Mr. Gerald T. Shannan
Vice President
Cerro Conduit Company
39 South LaSalle Street
Chicago, IL 60603

Dear Mr. Shannan:

This acknowledges that Cerro Wire Conduit located at Robbins Lane and Miller Place, Syosset, New York is no longer in operation. This site has been inspected and has met the requirements of 6NYCRR, Part 373-3.7, Closure and Post-Closure.

Please be advised that this in no way precludes your responsibility of Article 27, Title 13 (Superfund).

If you have any question on this matter, please contact me at (516) 751-7900, Ext. 227.

Sincerely,

Tanya Hermos

Tanya Hermos
Assistant Sanitary Engineer
Hazardous Waste Department

cc: Ray Advendt
Tony Candela
Robert Becherer

New York State Department of Environmental Conservation
Building 40—SUNY, Stony Brook, New York 11794

(516) 751-7900

Thomas C. Jorling
Commissioner

June 22, 1988

Mr. Gerald T. Shannan, Vice-President
Cerro Conduit Company
39 South LaSalle Street
Chicago, IL 60603

Re: Cerro Conduit, Soil Sampling Program
Phase 2 Report

Dear Mr. Shannan:

We have reviewed the subject report and the additional soil sampling done by H2M consultants and have determined that the report is acceptable.

There now remains two items to be addressed:

1. Requirement of Part VIII, (6) of the Consent Order; assessment of the results of the Plant decommissioning, and of the soil sampling program.

2. Based on the soil sampling results some remediation of the site will be necessary. In particular Basins 1, 2, 3, and the area around sampling point B109, where high levels of copper and cyanide are indicated.

Therefore, if in agreement, Cerro Wire Company shall develop and submit an assessment report and a remedial action report.

Sincerely,

Anthony Candela, P.E.
Senior Engineer
Hazardous Waste Remediation

AC:mz
cc: P. Gratton, Avendt
R. Piaggione
R. Becherer
M. Tumulty, H2M

File —
RJA ✓

THE AVENDT GROUP, INC.
ENGINEERS & SCIENTISTS

July 25, 1988

Mr. Anthony Candela, P.E.
Senior Engineer
NYSDEC
Building #40 - SUNY
Stony Brook, NY 11794

Re: Cerro Conduit, Syosset, New York

Dear Mr. Candela:

As a result of our July 21, 1988, meeting in your offices, we formally request that the following work tasks be approved to address the Consent Order, Part VIII, requirements for an assessment of the current or potential impacts of any threat to the environment and to determine the extent, if any, of a remedial action program. These work tasks have been developed to determine the horizontal and lateral extent of copper and cyanide concentrations in the soils beneath Basins 1, 2 and 3 and around sampling point B109.

A. Dry Basin Impact Assessment Program (see Figure 1)

1. The copper total metal and cyanide concentrations data for soil samples taken six feet below the basin floors indicate higher than site background levels. The copper total metal and cyanide concentrations within the 3 basins also vary considerably. Further characterizations of the basin floor soils is proposed using a uniform grid 50 feet on center. Samples will be collected, transported and analyzed in accordance with protocols previously approved in soil sampling phases 1 and 2. Samples will be taken at 3 foot and 6 foot depths. A total of 78 samples will be taken in the basins (Basin 1 - 24 samples; Basin 2 - 32 samples; Basin 3 - 18 samples). All samples will be analyzed for total copper and cyanide, mg/kg). Extraction procedure analysis for copper will not be performed on the soil samples as a result of previous investigations which indicated that the copper was not detectable in the EP elutrate at concentrations greater than 0.5 mg/l, which is less than the NY State Drinking Water Supply Standard for copper, 1.0 mg/l.

2. Soils having copper concentrations above "action levels" similar to NJDEP (170 mg/kg) will be quantified for subsequent impact assessment or removal.

3. Soils having cyanide concentrations above "action levels" similar to NJDEP (12 mg/kg) will be quantified for subsequent impact assessment or removal.

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4. Soil sampling work will proceed upon notification by NYSDEC and require a maximum of ten days field work. Laboratory and data analysis will require an additional 35 days. Split sampling with NYSDEC personnel and duplicate samples will be provided as requested. All field work will be coordinated with NYDEC personnel. Site access authorization will be provided by the Owner at the request of NYSDEC.

5. Documentation of the dry basin soil characterization will be submitted to NYSDEC within 90 days from authorization to proceed. The documentation report will propose subsequent actions, where necessary.

B. Tank Area Impact Assessment (see Figure 2)

1. The total metal copper concentrations in the soils beneath the former treatment system tanks are equal to or less than site background levels. One exception, however, is the total copper data from boring B109 which indicated copper levels two orders of magnitude higher than background adjacent samples. Further investigation of this boring location indicates that several below grade pipes exist in this area in addition to adjacent tanks. It is proposed that excavation be performed using a backhoe to determine the localized source of this copper.

2. Prior to excavation, the below grade 4" transite drain pipe will be air pressure tested to determine leakage potential.

3. In the event that the line is tight, excavation will proceed at 90^{o} angles from the B109 boring with the first transect parallel to the existing tankage. The excavation depth will be to the underside of the adjacent tank and former sludge well (12 ft) and below the drain pipe. Total copper concentrations in the soil will be determined in the field as the excavation proceeds at each 5 ft. horizon with a lateral spacing of 10 ft.

4. In the event that the drain line is not tight, the line will be excavated proceeding from the B109 boring to determine the point of leakage and extent of copper in the adjacent soils. Total copper concentrations will be determined in the field as the pipe is excavated at 5 ft. spacings beneath the pipe.

5. Soils having total copper concentrations above "action levels" similar to NJDEP (170 mg/kg) will be quantified for subsequent impact assessment or removal.

6. Soil excavation and sampling will proceed upon notification by NYSDEC and require a maximum of five days field work. Laboratory and data analyses will require an additional 35 days. Split sampling with NYSDEC personnel and duplicate samples will be provided as requested. All field work will be coordinated with NYSDEC personnel. Site access authorization will be provided by the Owner at the request of NYSDEC.

7. Documentation concerning the source of boring B109 total copper will be submitted to NYSDEC within 60 days from authorization to proceed. This documentation report will propose subsequent actions, where necessary.

We are prepared to initiate this work immediately upon authorization. Please contact the undersigned if there are any questions.

Very Truly Yours,

AVENDT GROUP, INC.

Raymond J. Avendt, Ph.D., P.E.
President

RJA/pam

cc: Gerald T. Shannon
Robert D. Chesler

THE AVENDT GROUP, INC.
ENGINEERS & SCIENTISTS

Cerro Consent Order File

November 8, 1988

Mr. Anthony Candela, P.E.
Senior Engineer
NYSDEC
Building #40 - SUNY
Stony Brook, NY 11794

Re: Cerro Conduit - Syosset, New York

Dear Mr. Candela:

We wish to advise you of the work tasks conducted to date regarding the Dry Basin and Tank Area Impact Assessment at the above referenced facility. Our July 25, 1988 letter to you outlined specific work tasks to be undertaken to determine the horizontal and lateral extent of copper and cyanide concentrations in the soils beneath dry basins 1, 2 and 3 and around sampling point B109.

Tank Area Impact Assessment

The total metal copper concentrations in the soils beneath the former treatment system tanks were determined in previous site characterizations to be equal to or less than site background levels. One exception, however, was the total copper data from boring B109, which indicated total copper levels two orders of magnitude higher than adjacent background samples. Further investigation of this boring location indicated that several below grade pipes existed in the area, in addition to adjacent tanks.

It was proposed in our July 26, 1988 letter that limited excavation be performed using a backhoe to determine the localized source of this copper. On September 1 and 2, 1988, our personnel and an excavation subcontractor pressure tested the 4" diameter transite pipe running adjacent to the B109 bore hole. The pipe failed the pressure test indicating potential leakage. The line was excavated in its entirety to determine the point of leakage. Figure 1 illustrates the excavated transite drain pipe that had previously carried overflow from the copper filter house. The 4" diameter transite pipe was found to run immediately adjacent to the B109 bore hole at a depth of 3' and continue along the fenced copper basin shown as on Figure 1. The B109 bore hole location adjacent to the buried pipe excavation is shown in Figure 2. The hand shovel is shown in the bore hole.

Stained soils indicating leakage were observed adjacent to the B109 bore hole as shown in Figure 3. The stained soils were limited to three inch depth beneath the cracked joint and extended horizontally 16 inches along the pipe.

Further soil excavation was conducted to a depth of 10 ft. to expose the foundation of the copper filter house and copper basin. As shown in Figure 4, no additional pipes or tank leakage points were observed. The excavations were backfilled using removed soils.

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Soil sampling results beneath the cracked joint were found to have the following total copper metal concentrations according to depth: 3.5 ft. (41,400 mg/kg); 6 ft. (254 mg/kg); 9 ft. (226 mg/kg) and 9.5 ft. (73 mg/kg). Total copper metal concentrations in all other excavated areas along the intact drainage pipe and copper basin were less than background 3.7 mg/kg; <3.2 mg/kg and <3.0 mg/kg). These samples were taken at 6 ft. depths, approximately 5 ft. on center. A split sample of this excavated soil was given to NYSDEC personnel who visited the site and observed the backfilling operations. The backhoe used to excavate the pipe and tank foundations had a depth limitation of 10 ft.

It is apparent from the soil test data that the localized source of copper detected in B109 was the cracked joint on the 4" diameter transite drainage pipe adjacent to the bore hole.

To confirm that the 17 ft. deep B109 sample (2200 mg/kg) was contaminated by the drainage pipe leakage soils falling into the bore hole, we propose to obtain four new samples 10 ft. off B109 at the same depth using a rotary drill rig. We will take new undisturbed samples at the 17 ft. depth through the hollow stem of the augers to eliminate contamination of the samples.

Laboratory results and sample splits will be exchanged with NYSDEC personnel, if requested. We will utilize full contract laboratory protocol procedures and sample chain of custody to assure data integrity. The field work is scheduled to be completed the week of November 14, 1988.

Dry Basin Impact Assessment

We had not initiated the sampling of the dry basins as proposed in our July 25, 1988 letter because a field survey was required to establish the exact dimensions of the basins and a dozer will be required to level the bottom of Basin 1 for the drill rig. The further characterization of the basin floor soils will be conducted the week of November 14, 1988. All work tasks will be as outlined in our July 25, 1988 letter. Samples will be collected, transported and analyzed in accordance with protocols previously approved in soil sampling phases 1 and 2. A total of 36 samples will be taken, however, due to the actual basins being smaller than shown on the site drawings.

Please contact our offices if there are any items that require clarification.

Very Truly Yours,

AVENDT GROUP, INC.

Raymond J. Avendt, Ph.D., P.E.
President

RJA/pam

cc: Gerald T. Shannon
Robert D. Chesler

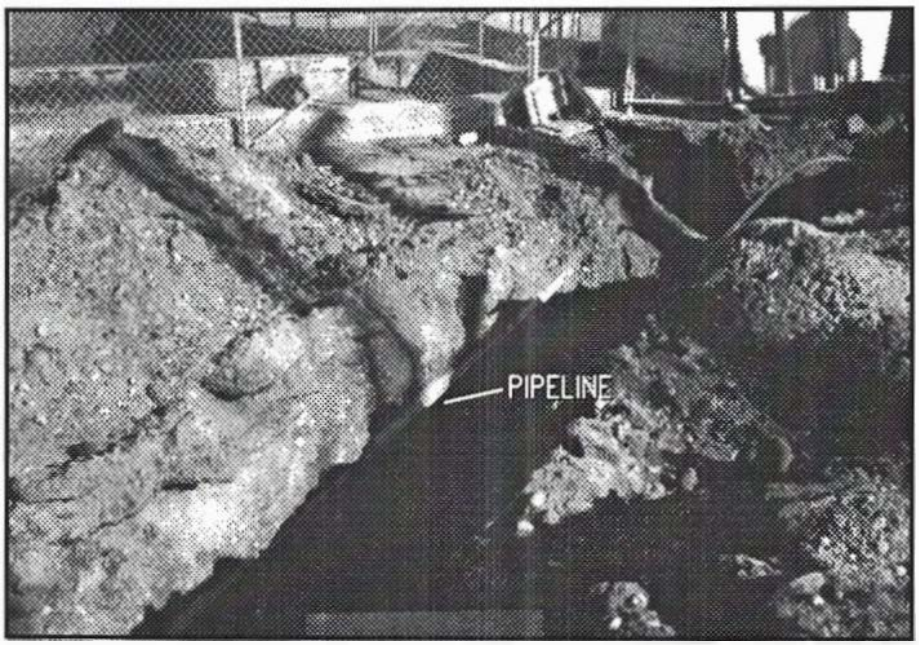
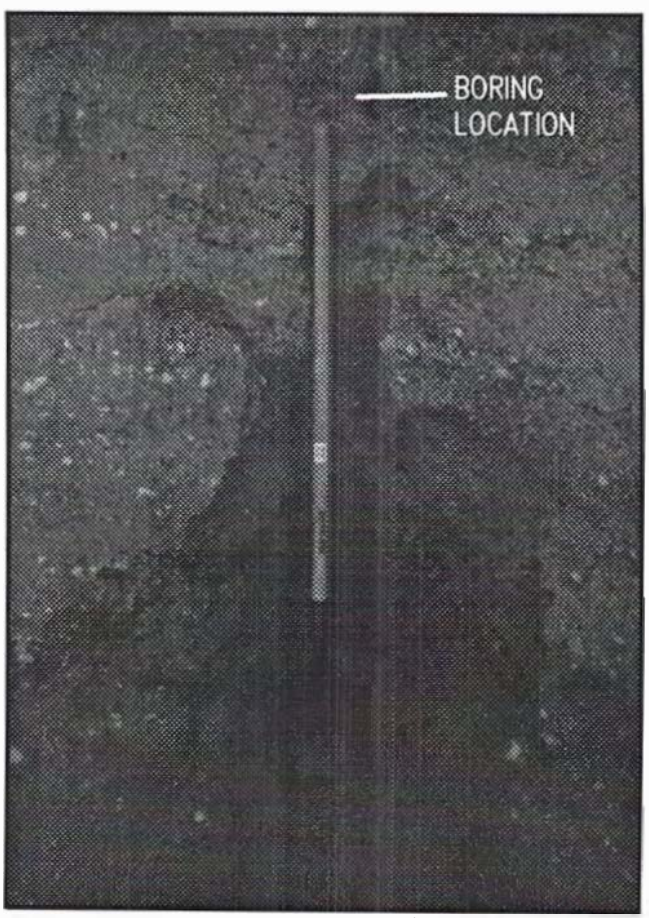


Figure 1. Excavated 4" Ø transite drain line from copper filter house at rear.



Figrue 2. Excavation along 4" Ø transite drain line showing proximity to B109 bore hole, indicated behind shovel

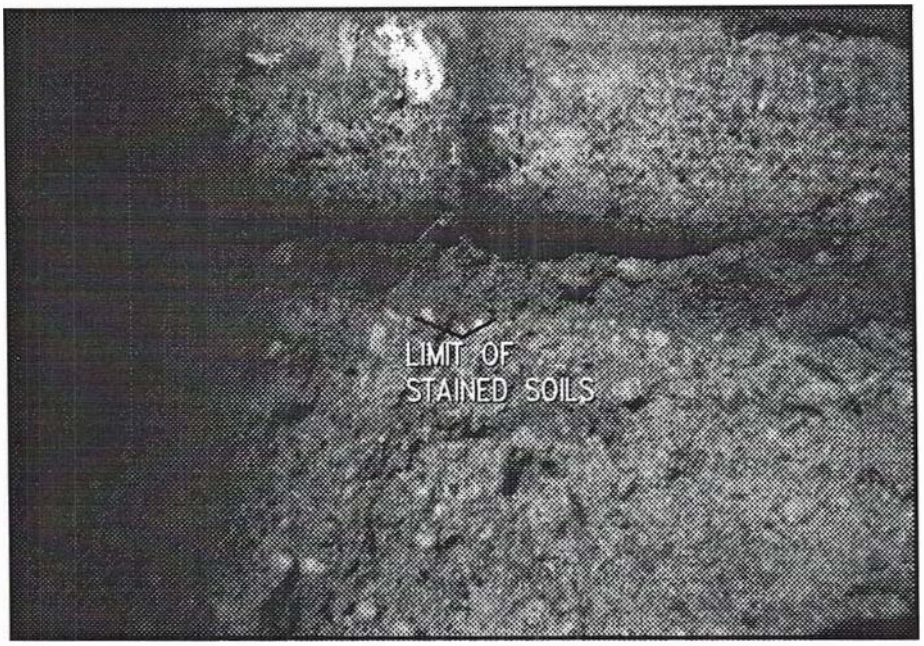


Figure 3. Cracked joint on 4" Ø transite drain line and limits of stained soils.

Figure 4. Excavation to bottom of copper filter house foundation slab (middle rear) and copper basin (left).

APPENDIX B
SAMPLING PROTOCOL

Sampling Techniques

All 36 soil samples were collected by soil borings using a split spoon sampler. All depths at which samples were taken were recorded in the daily field log and are presented on Table 1.

Proper use of the split spoon sampler and field sampling techniques were utilized by field personnel involved in sample collection. Field personnel were trained in use of the equipment and associated sampling procedures prior to field implementation. Details of equipment which was utilized and a description of the sampling procedure are outlined below.

Sampling Equipment for Soil Borings

2 sets of Split Spoon Samplers
Alconox Laboratory Cleaner
Brushes, Plastic Buckets, Paper Towels
Deionized Water
Surveyors Stakes and Tape
Plastic Sheeting, Plastic Bags
Disposable Surgical Gloves
Prelabeled Sample Containers
Beverage Coolers, Ice, Thermometer

Procedure for Split Spoon Sampling by Soil Boring[1]

1. Wear gloves and change gloves every 10 samples to avoid cross contamination of samples.
2. Prepare laboratory cleaner solution with deionized water in plastic bucket.
3. Disassemble equipment and immerse parts in detergent solution and scrub with plastic brushes to remove soil and dirt.
4. Place scrubbed parts in clean plastic bucket and flush with deionized water. Empty bucket and flush again. Repeat as necessary to remove all residue from equipment. Collect one sample of rinsewater for analysis as part of QA/QC efforts.

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[1] USEPA. Test Methods for Evaluating Solid Waste. Physical/Chemical Methods. Volume 1. SW-846. July 1982.

5. Dry all parts with paper towels and reassemble on plastic sheeting for next use. Store in plastic bag if not used immediately.
6. Mark sampling site with stake and surveyors tape. Surveyors stake will be marked with site location i.d. number in indelible ink.
7. Transfer the sampler to the driller (or helper); be sure that this person also wears clean gloves. Split spoon samplers will be in good condition, i.e., exhibiting no rust and free of lubricants, greases and oils.
8. The sample will then be collected by the driller using the standard penetration test.
9. Obtain the sampler from the driller and place it on plastic sheeting.
10. Unscrew the end cap and break the spoon open to expose the sample.
11. Using only the spatula, cut off the top 2-3 inches of sample and discard; transfer an appropriate portion to the prelabeled sample container. Fill the container as completely as possible.
12. Record sample location i.d. number, date and time on the sample label and cover with transparent tape. Brush off container and store in cooler with ice at 4^{o} C.
13. Complete daily field log including depth of boring and chain-of-custody form.
14. Deliver samples to the laboratory and obtain signature on chain-of-custody form.

Additionally, all samples were placed in clean containers prepared by Hittman-Ebasco Laboratories in accordance with CLP Protocol Methods. The balance of the information was filled out in the field.

1. Name of sampler and company affiliation
2. Date and time of sampling
3. Name sampling site (code will be assigned to maintain confidentiality)
4. Sample location i.d. number
5. Type of sample (composite)
6. Required analysis
7. Preservation (if any)

Field QA/QC Procedures

Several critical QA/QC procedures were associated with this sampling program namely: chain-of-custody documentation, daily field log notes, sample analysis request documentation and analysis of duplicates and rinsewater from cleaning equipment. The chain-of-custody control was documented by the use of chain-of-custody forms which identify the persons in possession of and responsible for the samples from the time they were collected until the time they were analyzed. The daily field log was completed daily to record an individual's daily sampling activities and to note any unusual conditions, although none were encountered. Sample analysis

request forms were also used to submit samples collected for analysis. Samples taken during the soil sampling program at Cerro were delivered on November 17, 1988. Duplicate samples were prepared in the lab for analysis and spikes were prepared from field samples for analysis. Rinsewater generated through equipment cleaning was sampled for analysis to ensure proper equipment decontamination.

Chain-of-Custody

A chain-of-custody form was used to document the possession of soil samples. This form reiterates all information on the sample label and serves as a record of persons in control of and responsible for samples from the time they were taken until the time they were analyzed. The form provides a space for the laboratory to enter its identification number for the incoming sample. Sample location i.d. numbers assigned in the field and laboratory i.d. numbers were cross-referenced; a master cross-reference list was generated so that samples may be identified by either number. Both numbers were used in conjunction with the sample location map as a permanent record of samples taken at specific locations. Upon sample delivery to the laboratory, the laboratory personnel responsible for receiving the samples added the laboratory identification numbers. The attachment to this report contains the completed chain-of-custody forms and all CLP data.

After collecting a sample, the containers were marked immediately with all appropriate information, the label was covered with transparent tape, and placed inside the beverage cooler with ice. The cooler was in the view and possession of the designated sampler at all times. The cooler was secured and locked in a vehicle to which no one else had access. After samples were collected, they were: 1) delivered to the lab, 2) the designated sampler signed and dated the chain-of-custody form and 3) relinquished custody of the samples to the designated laboratory personnel who also signed and dated the chain-of-custody form.

Daily Field Log

Notations were made daily in a field log kept by the designated sampler. The field log contained the following information:

1. Sample date
2. Weather observations
3. Identification of samples collected during the morning/afternoon session
4. Documentation of field equipment cleaning procedures
5. Any unusual sampling circumstances
6. Field diagram of sample locations

The field log was archived as permanent documentation of field sampling procedures performed as a portion of the soil sampling program.

Sample Analysis Request Forms

Sample analysis request forms were completed for each delivery of samples to the laboratory. The request form permanently documented the date of delivery to the lab and the analyses requested to be performed for each of the samples. The form contained the following information:

1. Name of sampler and company affiliation, including address and phone number.
2. Date and time of sampling.
3. Location of sampling site (code will be assigned to maintain confidentiality).
4. Sample location i.d. number and laboratory i.d. number (to be added by designated laboratory personnel).
5. Type of sample.
6. Pertinent field information (if any).
7. Analysis requested for each sample.

Duplicate, Spikes and Rinsewater Analysis

Four samples were selected by Hittman-Ebasco for duplicate analysis and are identified as follows: C105 (3 ft); C205 (3 ft); C207 (6 ft); and C303 (3 ft). All four duplicate samples analyzed were out of the laboratory control limits.

Spiked samples were prepared by Hittman-Ebasco from a selected set of field samples after extraction using the EP method or digestion for total metals analysis. After extraction or digestion, a known quantity of a particular analyte was added to the sample and then analyzed. Since the quantity which was added is known, the precision and accuracy of analytical techniques and equipment can be measured. Spiked samples selected by the lab were as follows: C105 (3 ft); C205 (3 ft); C207 (6 ft); and C303 (3 ft). All spiked samples analyzed were found to be within control limits. The spiked sample i.d. numbers were added to the master cross-reference list.

One rinsewater sample was collected during the sampling program. The rinsewater sample was analyzed for the identical parameters as the soil samples. The purpose of collection and analysis of rinsewater was to determine the effectiveness of equipment decontamination procedures to ensure the elimination of potential cross-contamination effects. The rinsewater sample was collected from the final rinse of equipment from one boring site. These samples were keyed to the sample location i.d. number to record the site where the sample was collected and added to the master cross-reference list. All chain-of-custody control procedures and analytical procedures

were used for rinsewater samples.

Worker Safety

A thorough investigation of past practices was performed to identify the types and characteristics of any potential contamination which may be found at Cerro to determine any potential worker health and safety hazards. As a manufacturer of copper wire, the contaminants which have the greatest potential of being discovered at Cerro are metals, mainly copper. Due to the existence of the plating line at the facility, cyanide is also of concern.

Cerro has never used the site for the landfilling of municipal solid wastes; therefore, the potential for methane generation has been judged to be negligible. As the site is not a disposal facility and was never used for drum or container burial, it was unlikely that any drums were to be encountered. Locations of all tanks and all appurtenant piping are known. Those areas are identified on facility mapping and were to be avoided during soil sampling efforts. No acids were used for equipment cleaning which greatly reduces or eliminates the potential for formation of cyanide gas. Cerro has never used any organic chemicals in their manufacturing process nor any acutely hazardous or toxic chemicals at the site. Therefore, the potential for human exposure, through air or ingestion, to any of these types of compounds approaches zero.

Hardhats, plastic gloves and rubber boots were used as protective equipment during sampling procedures. This level of protective equipment was adjudged to be sufficient for soil sampling procedures at Cerro due to the nature of on-site soils (sand) and the absence of any indication of severely hazardous or toxic compounds.[2]

Hittman-Ebasco Associates were apprised of the nature of the soil samples to be collected, i.e., they may contain cyanide. Any analytical technique which involves the addition of an acid was performed using a ventilation hood.

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[2] deVera, E.R., B.P. Simmons, R.D. Stephens and D.L. Storm. Samples and Sampling Procedures for Hazardous Waste Streams. EPA-600/2-80-018. MERL, Cincinnati, OH. January 1980.